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IDAHO NATIONAL LABORATORY

Volume 14
INTEC Liquid Waste Management System

Appendix I

Conceptual Design Report for the CPP-604 Embedded Lined Project
(ICP/INT-03-0083)

Revision Date: October 29, 2008

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November 2003

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Idaho Completion Project

Idaho Falls, Idaho 83415

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The following Conceptual Design
was prepared under the responsible charge of the Professional Engineer's
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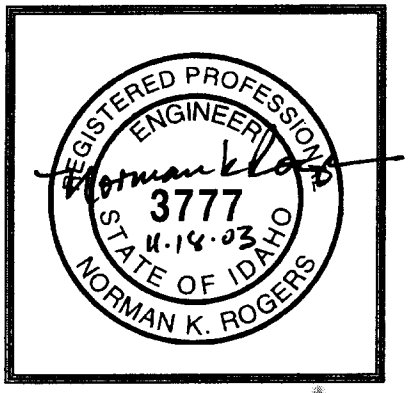

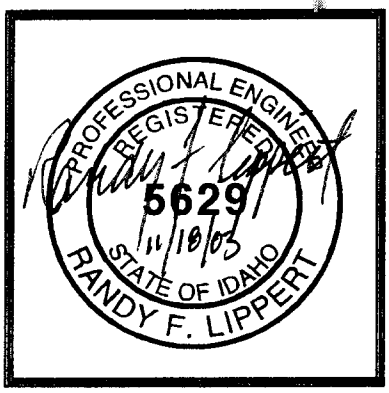

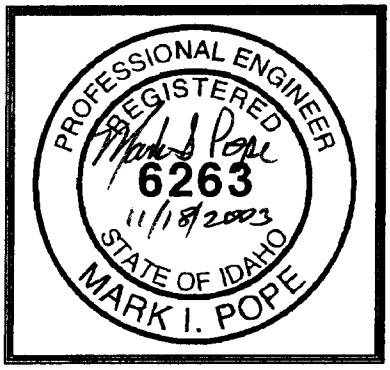

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1. INTRODUCTION / PROJECT SUMMARY

This Conceptual Design Report (CDR) details the conceptual design of the CPP-604 Embedded Lines Project which will provide secondary containment for seven process lines and one off gas duct as the pipes and ductwork penetrate the reinforced concrete walls at nine different locations in the building. Stainless steel sleeves will be installed in the concrete walls in nine locations around the outside diameter of the pipes and the duct forming a containment barrier within the concrete wall. This work is being done to bring the system into compliance with 40 CFR 264.193 (c), Containment and Detection of Releases (with the exception of the 12-in. off gas line which is being sleeved as a best management practice and is not RCRA regulated). The pipelines on either side of the wall penetrations were brought into compliance on a previous project.

INTEC Operations has been upgrading piping secondary containment since the mid-1980's. A notice of deficiency (NOD) was received from Idaho Department of Environmental Quality on May 7, 2003, in response to the Volume 14, Part B RCRA Permit Application requiring these lines be upgraded in CPP-604.

Also, because access to the vaults is very infrequent due to high radiation fields, a leaking flange on a steam jet line will also be repaired.

1.1. Introduction / Background

1.1.1. General

The Process Equipment Waste Evaporator (PEWE) system reduces the volume of hazardous waste sent to the INTEC Tank Farm Facility (TFF). The PEWE system evaporates the wastes, producing concentrated wastes (bottoms) and vapor condensates (overheads). The overheads are transferred to the Liquid Effluent Treatment and Disposal (LET&D) for further processing. The bottoms generated from the PEWE go to VES-WL-101 or VES-WL-111 or are recycled back to VES-WL-133 for further processing. From VES-WL-101 or VES-WL-111, the bottoms can be sent to the CPP-604 Tank Farm Tanks (TFT), VES-WM-100, VES-WM-101, and VES-WM-102, the TFF, or back to the Evaporator Tank System (ETS). The PEWE system includes tanks and ancillary equipment in buildings CPP-604, CPP-601, CPP-641, CPP-649, CPP-659 Annex, CPP-1618, and associated valve boxes.

The Waste Treatment Building, CPP-604 (housing the process lines which are the subject of this report) contains equipment for treating INTEC liquid wastes. CPP-604 is located east of the Process Building, CPP-601, and south of the TFF. Figure 1 is an isometric drawing of CPP-604, showing the physical arrangement of the various cells, corridors, and other areas.

CPP-604 was originally constructed in the 1951 to 1953 timeframe. The main portion of CPP-604 is located below grade and is constructed of reinforced concrete. The building is approximately 115 ft wide on its widest end (north end) and 130 ft long on its longest side (west side).

1.1.2. Facility Functions & Operations

CPP-604 consists of the following primary areas:

1.1.2.1. Evaporator Feed Collection/Feed Sediment Tank Vaults

The vaults for the Evaporator Feed Collection Tank, VES-WL-133, and the Evaporator Feed Sediment Tank, VES-WL-132, are connected by a doorway in a common wall. A ladder provides access to the VES-WL-133 vault from the VES-WL-132 vault, and a concrete hatch seals the VES-WL-132 vault from the above-grade portion of the building. The VES-WL-133 vault is in the northeast corner of the CPP-604 building. The vault has internal dimensions of 16 ft 6 in. by 42 ft. The VES-WL-132 vault is located just south of the VES-WL-133 vault and has internal dimensions of 16 ft 6 in. by 17 ft. The vaults are constructed of reinforced concrete and the floor and lower 2 ft 6 in. of the walls are lined with stainless steel.

1.1.2.2. Evaporator, Process Condensate Collection, and Feed Pump Cell

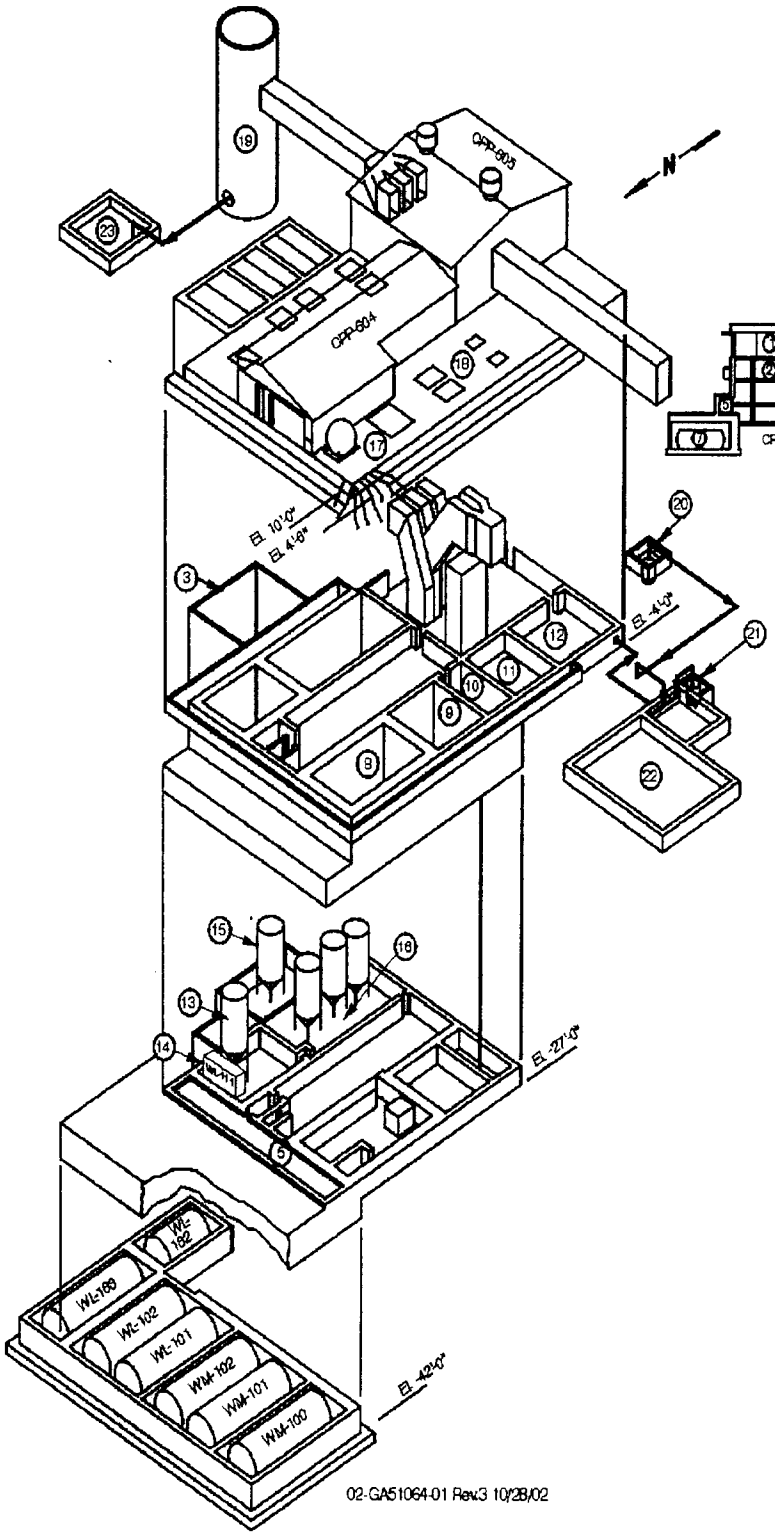
The two evaporator cells contain evaporators, VES-WL-161 and VES-WL-129. The process condensate collection cell contains the Process Condensate Collection Tanks (VES-WL-106, VES-WL-107, and VES-WL-163). The feed pump cell contains the two feed pumps, P-WL-228 and P-WL-229. The cells are all interconnected. Access to these cells is gained through a doorway into the condensate collection cell from the access corridor or by removing the cell hatches. The process condensate collection cell has internal dimensions of 21 ft by 46 ft. The evaporator cell is located just north of the process condensate collection cell; it has internal dimensions of 18 ft by 22 ft. The EVAP-WL-161 evaporator cell also houses VES-WL-111. The evaporator cell, located east of the condensate collection cell, has internal dimensions of 14 ft by 15 ft 8 in. The feed pump cell is located just north of the VES-WL-129 evaporator cell and has internal dimensions of 9 ft 2 in. by 14 ft 6 in.

1.1.2.3. CPP-604 Tank Farm Tanks

The TFT system tanks are located in two connected and below-grade vaults at the north end of CPP-604. The west vault, containing VES-WM-100, is constructed of reinforced concrete and is 17 ft wide, 43 ft long, and 16 ft high. The adjacent vault contains VES-WM-101 and VES-WM-102 and is 30 ft 6 in. by 43 ft by 16 ft high. The floors and lower 3 ft 6 in. of the walls in both vaults are lined with stainless steel.

1.1.2.4. Bottoms Tank and Feed Collection Tank Vault

The vault contains VES-WL-101 and VES-WL-102 and is constructed of reinforced concrete that ranges in thickness from 2 to 4 ft. This vault is 30 ft wide, 43 ft long, and 16 ft high. The secondary containment is constructed of concrete floor lined with a Hypalon membrane, which extends three feet up the walls.



Legend

1 - Chemical Makeup Area
2 - Operating corridor
3 - VES-WL-129 evaporator cell
4 - Pipe corridor
5 - Sample corridor
6 - Access corridor
7 - Tank storage vault
8 - North cell
9 - Middle cell
10 - South cell
11 - VOG filter cell
12 - VOG blower cell
13 - VES-WL-161 Evaporator
14 - VES-WL-111
15 - VES-WL-129 Evaporator
16 - Separation and Condensation collection cell
17 - Hatch access to north cell
18 - Cell hatches
19 - Main exhaust stack
20 - D5 vault
21 - D8 vault
22 - Bldg. 649 process off-gas treatment area
23 - D4 vault

Figure 1. Building CPP-604.

1.2. Mission Need

40 CFR 264.193 (c) requires secondary containment for pipelines containing hazardous waste material. Secondary containment systems must be designed, installed, and operated to prevent any migration of wastes or accumulated liquid out of the system during use.

The following lines identified in Table 1 below have been identified as requiring secondary containment.

Table 1. CPP-604 Process Lines Requiring Secondary Containment

Penetration Number	Location	Function
3-in. PWM-1018Y	VES-WM-101/102 Vault	Jet transfer line from WM-101 to WM-100
3-in. PWM-10024Y	VES-WM-101/102 Vault	Jet transfer line from WM-100 to WM-102
3-in. PWM-20015Y	VES-WM-101/102 Vault	Overfill line between WM-100/WM-101
1 ½-in. PWL-2091C	Wall between 161 Evap. Cell and Condensate Collection Cell	Transfer line from VES-WL-109 to the VES-WL-161
1 ½-in. PWL-2091C	Wall between 161 Evap. Cell and Condensate Collection Cell	Transfer line from VES-WL-109 to the VES-WL-161
4-in. PWL-1133C	Wall between 161 Evap. Cell and VES-WL-101 Vault	Evaporators discharge line to VES-WL-101 Tank
1 ½-in. PWL-2068C	Condensate Collection Cell to Pipe Corridor CPP-604	Discharge line from the collection tanks to the LET&D process
1 ½-in. PWL-2069C	Wall between the Operations Corridor and CPP-605	Discharge line from the collection tanks to the LET&D process
12-in. PSA-105551	Wall between 161 Evap. Cell and the Condensate Collection Cell	Off gas line: This line is RCRA compliant and being modified as a best management practice.

In addition to the work described above, the discharge line from steam jet JET-WM-502 is leaking and requires replacement. While the WM-101/102 tank vault is prepared for personnel entry, this gasket will be replaced.

These lines are detailed in drawings included in Appendix A.

2. PROJECT BASIS

2.1. Key Project Assumptions

To the extent practical, this conceptual design report is based on known facts and documented information about the facility configuration, status, and operation. However, because of the high radiation fields and contamination, field verification of much of the information is not practical at this time. In addition, the future configuration of the facility and systems within is not guaranteed. Therefore, this design is based on the following list of key project assumptions:

2.1.1. Radiation Fields

Radiation fields in some areas of construction are reported to be as high as 50 R/hr. It is assumed through one or more of the following steps the radiation fields in the work areas will be reduced significantly (around 30 to 50 mR/hr).

- General decontamination of work areas
- Empty tanks and piping of process fluids
- Filling tanks and piping with water
- Installing temporary shielding in hot spots

2.1.2. Field Conditions

Entry into the construction areas was not feasible at this stage of the design process. Therefore, it is assumed that existing drawings accurately represent actual field conditions within the facility. A further complication to this effort is that many of the areas of construction have not been entered by personnel since the facility began operation.

2.1.3. Piping Integrity

Much of the piping which will be saw cut for access, and subsequently rewelded is approaching 50 years old. Over those years of service the piping has at least had the potential for handling extremely corrosive fluids. It is assumed that the existing piping has adequate wall thickness remaining to allow for welding new piping to, and is adequate for the desired service in the future. If it is determined that the wall thickness of the existing piping is not adequate for either connection or future service, not only is completion of this project jeopardized, but continued operation of the PEWE system could be jeopardized.

2.2. Summary Technical Requirements

The overall technical requirement for this project is to provide secondary containment for the hazardous waste piping in CPP-604. The facility itself provides secondary containment for the piping and vessels that it contains. However some of the hazardous waste piping passes through concrete walls without adequate secondary containment. It is hypothesized that a leak in the piping within the wall penetrations could travel through the walls and into the ground without being detected. Therefore, secondary containment sleeves shall be installed around those pipes to direct fluids from a leak in the penetration area to the cell or vault floor where it can be contained and detected.

2.2.1. Technical and Functional Requirements

- Install sleeves to make pipe penetrations compliant with 40 CFR 264.193 (c)

- Replace leaking flange gasket on discharge line of JET-WM-502
- Use materials that are compatible with existing materials, systems and operating pressures
- Minimize radiation exposure to workers
- Minimize schedule impact to operations
- Obtain the following waivers:
    - Waiver from DOE-ID Architectural Engineering Standards and ASME B31.3 to allow socket welds on process piping over 2 inches in diameter. This is required because there is no way to purge the piping in order to perform butt-welds.
    - Waiver from ASME B31.3 to allow vacuum box leak tests on Category M piping in lieu of hydrostatic leak testing and sensitive leak testing. This is required because there is no way to isolate these lines in order to perform pressure testing.

2.3. General Project Description

2.3.1. Project Technical Description

2.3.1.1. General

Seven process waste pipes penetrate cell walls in CPP-604 in eight different locations. In addition, one off-gas line penetrates a cell wall. In total, penetration sleeves will be installed in nine different wall penetrations.

2.3.1.2. Project Risks

This project has a limited number of risks, but these few risks could carry a significant impact on operation of the facility. As listed in the assumptions section above, radiation fields, field conditions, and piping integrity also depict the project risk.

Inability to reduce radiation fields to acceptable levels could result in delay or cancellation of the project. Because of this risk, the project team has included additional methods to reduce radiation levels. These methods include adding water to the vessels and piping for shielding, and the installation of temporary shielding as needed to reduce worker exposure. Previous experience in similar work areas indicate that the radiation fields can be lowered to an acceptable level.

Unexpected field conditions could also result in delay or increased cost of the project. Project team members have observed the latest video taken in the cell and vault

areas to compare field conditions with those depicted on original construction drawings. Also, numerous conversations with long time operations personnel have helped the design team to understand potential unexpected field conditions. It is not expected that field conditions will be considerably different than those presented in this conceptual design report.

Piping integrity is not totally unknown. Leaks within the work areas have not developed such that the piping integrity should be questioned. Work on other similar piping with similar service has not revealed a problem. The likelihood of the existing piping being inadequate for continued service is low. However, the impact of such a condition is high. If such a condition is found, then replacement of similar piping with similar fluid service may be required locally to make the field connections and/or throughout the facility.

2.3.1.3. Radiation Exposure/ALARA Issues

Radiological evaluations and controls will include an ALARA Review prepared by Radiological Engineering defining radiological hazards involved, as known, with the project and proposed mitigations and work controls. These controls, and others, will be included in a job specific RWP along with any work control evaluation points and limiting conditions that will control changing or unplanned conditions as work progresses. These documents and the work control document will be reviewed by the INTEC facility ALARA Committee, and considering the high radiological risk involved with these activities, reviewed by the Site INEEL ALARA Committee.

Workers will be positioned at the maximum distance available from the radiation sources. Temporary shielding will be used for areas of high exposure, as appropriate. Radiological Control will provide constant monitoring and evaluate conditions and controls as they evolve.

2.3.1.4. Other Alternatives Considered

2.3.1.4.1. Do Nothing Alternative

Given the unlikelihood that a fluid flow path would develop to allow fluid to migrate down through the concrete wall matrix to below the building, a do nothing alternative was considered. However, because hazardous wastes are being generated, this piping is subject to RCRA regulation and the requirements must be met.

2.3.1.4.2. Alternatives to Sleeving

See sections 2.4.5.5 and 2.4.6.6.

2.3.2. Codes and Standards

2.3.2.1. Civil/Structural

- PRD-2003, Ladders
- PRD-2004, Scaffolding
- DOE-ID Architectural Engineering Standards
- DOE-STD-1090, Hoisting and Rigging
- 29 CFR 1910 Subpart L, OSHA, Safety and Health Regulations for Construction, Scaffolds, December 2002
- 29 CFR 1910 Subpart X, OSHA, Safety and Health Regulations for Construction, Stairways and Ladders, December 2002

2.3.2.2. Mechanical

- DOE-ID Architectural Engineering Standards
- ASME Code for Pressure Piping, B31.3
- ASME Boiler & Pressure Vessel Code, Section I & IV

2.3.3. Proposed Construction Methodology

High radiation and contamination are expected in the work area. Early entrance for engineering inspection into some of the vaults and cells is not practical at the timeframe of writing this conceptual design report. The uncertainty and risk for this project are both high. Therefore, it is recommended that Direct Hire Construction Forces perform this work.

The work will be performed on each penetration individually in the sequence described below. This sequence was developed to allow for a given vault or cell to be decontaminated, shielded, and prepared for work only once, even if the cell has numerous penetrations to be sleeved. This also allows some auxiliary equipment to be reused on other cells or vaults.

The project will consist of three steps for each penetration sleeve installation. First, the construction area will be prepared for access. This will involve physical access work such as removing access hatches, installing access ladders, scaffolding, and platforms. This step will also involve general decontamination of the work areas, the installation of temporary shielding, internal decontamination of piping (removal of sludge in the vessels by air sparging and flushing), and filling the vessels with water to reduce the radiation exposure to the workers. (Filling vessels with water creates waste and should be minimized.) Additionally, temporary HEPA-filtered exhauster ventilation systems will be installed to minimize and control airborne radioactivity at the source of generation. Radiological contamination control enclosures (radiation contamination

control tents) will be used over hatches that are opened to minimize the spread of contamination from the cells or vaults into the surrounding areas.

Next, the actual work will take place. The piping will be isolated from other piping systems and services. The piping will be cut to allow access for core drilling and/or sleeve installation. If core drilling is necessary, the area around the piping will be core drilled to allow for installation of the new sleeves. The piping will then be reconnected to the system and inspected. The system isolation will then be removed.

The final step will be restoration of the system and the work area, or the clean-up phase. This will involve removal of shielding, ladders, scaffolding, platforms, construction tools, construction debris as required, and a general clean-up of the work area. Access hatches and cell doors will be closed, and the area will be returned to operating condition.

2.4. Technical Description of Work

The vault floors are lined with Hypalon and extra care will be taken in the relocation and use of the scaffolding to prevent damage to the liner. Mechanical protection will be provided at scaffolding contact points to protect the liner from damage. Anytime the stainless steel liner is penetrated it will have to be leak tested. The Hypalon liner repair and the stainless steel liner modifications or repair will be PE certified after the work is completed.

2.4.1. 3-in. PWM-1018Y

- This line serves as a transfer line from VES-WM-101 to VES-WM-100, and is a discharge line from steam jet JET-WM-504. The line penetrates the wall between the two tank vaults. It is desirable to not access the WM-100 tank vault because high radiation fields are expected. Therefore, it is proposed that all work be accomplished from the WM-101/102 tank vault. This will require the following steps:

2.4.1.1. Access Preparation for 3-in. PWM-1018Y

- Lift and remove the WM-101/102 tank vault hatch cover. Access into the tank vault is achieved by entering the hatchway located at the southeast corner of the vault, accessed from the Sample Corridor. The hatch consists of two 2-ft thick concrete sections. Lifting of the hatch will be accomplished in the same manner that has been used previously. Lifting eyes have been installed directly above the hatch. A chain hoist is attached to the eyes and is used to lift the hatch sections above the floor level. The sections are then lowered on to pipe, which is used to move the sections to the side of the hatchway.

- Install temporary ventilation system in the WM-101/102 tank vault. Ventilation shall be a portable HEPA filtered unit ventilator with 1,350 cfm minimum capacity. This flow rate is based on 150 linear feet per minute face velocity through the 3 ft by 3 ft access hatch opening. This equates to an air exchange rate of 4.7 air changes per hour. Because workers are expected to be in full anti-c clothing and respirators, the air exchange rate is not critical for occupancy. This exchange rate is acceptable to keep construction dust cleared out of the vault air. The ventilation hose shall be inserted through the vault access hatch and routed to the far north end of the vault to draw air through the access hatch, past the workers, and into the hose. Outlet from the ventilation unit will be exhausted into the Sample Corridor.

- Install local exhaust system to be used as required to reduce contamination spread from work area.

- Install ladder from the Sample Corridor to the floor of the WM-101/102 tank vault. An extension ladder will be used to gain access into the vault, complying with PRD-2003. The distance of descent is 20 ft from the Sample Corridor floor level to the tank vault floor level.

- Decontaminate WM-101/102 tank vault as directed by Radiological Control.

- Fill vessels VES-WM-101 and VES-WM-102 with water as necessary to provide shielding from tank bottoms. This will be performed by Operations and will be only as required to reduce working radiation fields to acceptable levels.

- Install additional radiation shielding as required and as directed by Radiological Control to reduce radiation exposure to workers.

- Install scaffolding for access to 3-in. PWM-1018Y. The line penetration is located in the west wall of the vault and is approximately 13 ft 6 in. above the floor level. Tube and clamp scaffolding will be used to access the penetration, complying with all requirements of PRD-2004. The scaffolding will be provided with adjustable jacks to accommodate the sloping floor of the vault and guardrails for fall protection. The working platform is required to be approximately 8 ft above the vault floor to provide sufficient access to the pipe and penetration. This height will require stacking of the scaffold; therefore, the scaffold will be tied off using existing inserts in the vault wall, providing the necessary stability for the scaffolding.

2.4.1.2. Work Description for 3-in. PWM-1018Y

- Isolate 3-in. PWM-1018Y.
- Install temporary pipe support for 3-in. PWM-1017Y just upstream of cut line in next step.
- Cut and remove section of 3-in. PWM-1017Y to allow room for core drill machine. See Drawing P-2.
- Install temporary pipe plugs.
- Core drill through 2-ft thick reinforced concrete wall around 3-in. PWM-1018Y.
- Install sleeve through wall between tank vaults and grout. See Drawing P-4. Sleeve shall be stainless steel piping, schedule 10S, in accordance with ASTM A-A814 Grade TP304L.
- Remove temporary pipe plugs.
- Reconnect 3-in. PWM-1017Y. See Drawing P-2. Piping shall be stainless steel, schedule 40S, ASTM A814 Grade TP304L , with socket weld fittings, in accordance with ASTM A403.
- Remove temporary pipe support installed above.
- Perform welding inspections and vacuum box leak testing on all process piping welds in accordance with ASME B31.3 for Category M fluids.
- Return 3-in. PWM-1018Y and connected piping to operating status by removing lock and tags on isolated valves. Operations will direct the desired position for all valves.

2.4.1.3. Restoration of System and Work Area for 3-in. PWM-1018Y

- Leave ventilation system in place for work on other lines in this vault.
- Leave water in vessels for work on other lines in this vault.
- Leave other shielding in place for work on other lines in this vault.
- Leave scaffolding in place for work on other lines in this vault.

2.4.2. 3-in. PWM-10024Y

This line serves as a transfer line from VES-WM-100 to VES-WM-102, and is a discharge line from steam jet JET-WM-503. The line penetrates the wall between the two tank vaults. It is desirable to not access the WM-100 tank vault because high radiation fields are expected. Therefore, it is proposed that all work be accomplished from the WM-101/102 tank vault. This will require the following steps:

2.4.2.1. Access Preparation for 3-in. PWM-10024Y

- Access preparation for this vault has been provided in the steps described in Section 2.4.1.1 for 3-in. PWM-1018Y.

- Relocate the scaffolding installed for access to 3-in. PWM-1018Y as required to provide access to 3-in. PWM-10024Y. The line penetration is located in the west wall of the WM-101/102 vault and is approximately 13 ft 6 in. above the floor level. The working platform is required to be approximately 8 ft above the vault floor to provide sufficient access to the pipe and penetration. This height will require stacking of the scaffold; therefore, the scaffold will be tied off using existing inserts in the vault wall, providing the necessary stability for the scaffolding.

- Relocate local exhaust system to be used as required to reduce contamination spread from work area.

- Install additional radiation shielding as required and directed by Radiological Control.

2.4.2.2. Work Description for 3-in. PWM-10024Y

- Isolate 3-in. PWM-10024Y.

- Install temporary pipe support for 3-in. PWM-10025Y just upstream of cut line in next step.

- Cut and remove section of 3-in. PWM-10025Y to allow room for core drill machine. See Drawing P-2.

- Install temporary pipe plugs.

- Core drill through 2-ft thick reinforced concrete wall around 3-in. PWM-10024Y.

- Install sleeve through wall between tank vaults and grout. See Drawing P-4. Sleeve shall be stainless steel piping, schedule 10S, in accordance with ASTM A814 Grade TP304L.

- Remove temporary pipe plugs.

- Reconnect 3-in. PWM-10025Y to 3-in. PWM-10024Y. See Drawing P-2. Piping shall be stainless steel, schedule 40S, ASTM A814 Grade TP304L, with socket weld fittings, in accordance with ASTM A403.

- Remove temporary pipe support installed above.

- Perform welding inspections and vacuum box leak testing on all process piping welds in accordance with ASME B31.3 for Category M fluids.

- Return 3-in. PWM-10024Y and connected piping to operating status by removing lock and tags on isolated valves. Operations will direct the desired position for all valves.

2.4.2.3. Restoration of System and Work Area for 3-in. PWM-10024Y

- Leave ventilation systems in place for work on other line in this vault.

- Leave water in vessels for work on other line in this vault.

- Leave other shielding in place for work on other line in this vault.

- Leave scaffolding in place for work on other line in this vault.

2.4.3. 3-in. PWM-20015Y

This line serves as a gravity feed overflow line from VES-WM-100 to VES-WM-101. The line penetrates the wall between the two tank vaults. It is desirable to not access the WM-100 tank vault because high radiation fields are expected. Therefore, it is proposed that all work be accomplished from the WM-101/102 tank vault. This will require the following steps:

2.4.3.1. Access Preparation for 3-in. PWM-20015Y

- Access preparation for this vault has been provided in the steps described in Section 2.4.1.1 for 3-in. PWM-1018Y.

- Relocate the scaffolding installed in this vault for access to 3-in. PWM-10024Y as required to provide access to 3-in. PWM-20015Y. The line penetration is located in the west wall of the WM-101/102 vault and is approximately 10 ft 6 in. above the floor level. The working platform is required to be approximately 5 ft above the vault floor to provide sufficient access to the pipe and penetration. Modify the scaffold for this height; the scaffold can be self-standing, not requiring added support.

- Relocate local exhaust system to be used as required to reduce contamination spread from work area.

- Install additional radiation shielding as required and as directed by Radiological Control to reduce radiation exposure to workers.

2.4.3.2. Work Description for 3-in. PWM-20015Y

- Isolate 3-in. PWM-20015Y.

- Install temporary pipe support for 3-in. PWM-20016Y just upstream of cut line in next step.

- Cut and remove section of 3-in. PWM-20016Y to allow room for core drill machine. See Drawing P-2.

- Install temporary pipe plugs.

- Core drill through 2-ft thick reinforced concrete wall around 3-in. PWM-20015Y

- Install sleeve through wall between tank vaults and grout. See Drawing P-4. Sleeve shall be stainless steel piping, schedule 10S, in accordance with ASTM A814 Grade TP-304L.

- Remove temporary pipe plugs.

- Reconnect 3-in. PWM-20016Y to 3-in. PWM-20015Y. See Drawing P-2. Piping shall be stainless steel, schedule 40S, ASTM A814 Grade TP304L, with socket weld fittings, in accordance with ASTM A403.

- Remove temporary pipe support installed above.

- Perform welding inspections and vacuum box leak testing on all process piping welds in accordance with ASME B31.3 for Category M fluids.

- Return 3-in. PWM-20015Y and connected piping to operating status.

2.4.3.3. Restoration of System and Work Area for 3-in. PWM-20015Y

- Leave ventilation systems in place for work on JET-WM-502 in this vault.

- Leave water in vessels for work on JET-WM-502 in this vault.

- Leave other shielding in place for work on JET-WM-502 in this vault.

- Leave scaffolding in place for work on JET-WM-502 in this vault.

2.4.3.4. *Replace Flange on JET-WM-502 on VES-WM-102*

- Access preparation for this vault has been provided in the steps described in Section 2.4.1.1 for 3-in. PWM-1018Y.

- Relocate the scaffolding installed in this vault for access to VES-WM-102 as required to provide access to JET-WM-502. The working platform is required to be at the top of the vessel approximately 10 ft above the vault floor to provide sufficient access to the flange.

- Relocate local exhaust system to be used as required to reduce contamination spread from work area.

- Install additional radiation shielding as required and as directed by Radiological Control to reduce radiation exposure to workers.

- Isolate steam jet JET-WM-502.

- Inspect piping for leaks.

- Disassemble flange on discharge of JET-WM-502.

- Replace ring joint flange gasket.

- Leak test gasket and flange.

- Reassemble flange.

- Return JET-WM-502 and connected piping to operating status.

2.4.3.5. *Restoration of System and Work Area for Steam Jet JET-WM-502*

- Remove scaffolding from tank vault.

- Remove temporary shielding from tank vault.

- Operations to remove water from vessels in accordance with existing operating procedures.

- Remove ladder and save for access into WL-101/102 tank vault.

- Remove ventilation system and save for work in the WL-101/102 tank vault.

- Replace hatch cover to WM-101/102 tank vault using pipe and chain hoist described in Section 2.4.1.1.

2.4.4. 4-in. PWL-1133C

This line serves as a gravity feed line from the evaporators to VES-WL-101. The line penetrates the wall between the Evaporator Cell #1 and the WL-101/102 tank vault. This line runs from just above the floor level of the Evaporator Cell #1, through the wall with an offset of approximately 3 ft 8 in., and into the WL-101/102 tank vault just below the ceiling level. The existing penetration will be abandoned in place, and a new penetration, sleeve, and pipe will be installed. The work will require the following steps:

2.4.4.1. Access Preparation for WL-101/102 Tank Vault for 4-in. PWL-1133C

- Lift and remove the WL-101/102 tank vault hatch cover. Access into the tank vault is achieved by entering the hatchway located at the southwest corner of the vault, accessed from the Sample Corridor. The hatch consists of two 2-ft thick concrete sections. Lifting of the hatch will be accomplished in the same manner that has been used previously. Lifting eyes have been installed directly above the hatch. A chain hoist is attached to the eyes and is used to lift the hatch sections above the floor level. The sections are then lowered on to pipe, which is used to move the sections to the side of the hatchway.

- Install ladder from the Sample Corridor to the floor of the WL-101/102 tank vault. An extension ladder will be used to gain access into the vault, complying with PRD-2003. The distance of descent is 20 ft from the Sample Corridor floor level to the tank vault floor level.

- Install temporary ventilation system in the WL-101/102 tank vault. Ventilation shall be a portable HEPA filtered unit ventilator with 1,350 cfm minimum capacity. This flow rate is based on 150 linear feet per minute face velocity through the 3 ft by 3 ft access hatch opening. This equates to an air exchange rate of 4.7 air changes per hour. Because workers are expected to be in full anti-c clothing and respirators, the air exchange rate is not critical for occupancy. This exchange rate is acceptable to keep construction dust cleared out of the vault air. The ventilation hose shall be inserted through the vault access hatch and routed to the floor level of the vault to draw air through the access hatch, past the workers, and into the hose. Outlet from the ventilation unit will be exhausted into the Sample Corridor.

- Install local exhaust system to be used as required to reduce contamination spread from work area.

- Decontaminate WL-101/102 tank vault as directed by Radiological Control.

- Fill vessels VES-WL-101 and VES-WL-102 with water as necessary to provide shielding from tank bottoms. This will be performed by Operations and will be only as required to reduce working radiation fields.

- Install additional radiation shielding as required and as directed by Radiological Control to reduce radiation exposure to workers.

- Use scaffolding for access to 4-in. PWL-1133C. Scaffolding exists in tank vault. This scaffolding was left after previous work of installing VES-WL-150. It is assumed the scaffolding is in good condition and can be used for the proposed work. Relocate and modify the scaffolding as required to provide access for the installation of the new piping.

2.4.4.2. Access Preparation for Evaporation Cell #1 for 4-in. PWL-1133C

- Access to the Evaporation Cell #1 is through the Separation and Condensate Cell. Therefore, access preparation for the Evaporation Cell #1 will also require access preparation for the Separation and Condensate Cell. Access into the Separation and Condensate Cell is through a 2 ft 6 in. wide by 7 ft high door at the south end of the west wall from the Access Corridor. Entry into the Evaporation Cell is from the Separation and Condensate Cell through a 2 ft 6 in. wide by 7 ft high Z-shaped door way in the 3-ft wall separating the two cells. The Evaporation Cell is located north of Separation and Condensate Cell.

- Install local exhaust system to be used as required to reduce contamination spread from work area.

- Decontaminate the Separation and Condensate Cell as directed by Radiological Control.

- Decontaminate the Evaporation Cell #1 as directed by Radiological Control.

- Fill selected vessels in both the Evaporation Cell #1 and the Separation and Condensate Cell with water as necessary to provide shielding from tank bottoms. This will be performed by Operations and will be only as required to reduce radiation fields in the work area.

- Install additional radiation shielding as required and as directed by Radiological Control to reduce radiation exposure to workers.

2.4.4.3. Work Description for 4-in. PWL-1133C

- Isolate 4-in. PWL-1133C.

- Install temporary pipe support for 4-in. PWL-1134C in the WL-101/102 tank vault just upstream of cut lines in next step.

- Cut and remove section of 4-in. PWL-1134C in the WL-101/102 tank vault to allow room for capping of the existing penetration and rerouting of the piping to the new penetration. See Drawing P-2.

- Install temporary pipe support for 3-in. PS-AR-155618 and 3-in. PSA-100603 in the Evaporation Cell #1 just upstream of cut lines in next step.

- Cut and remove section of 4-in. PWL-1139C, 3 in PS-AR-155618, and 3-in. PSA-100603 in the Evaporation Cell #1 to allow room for capping of the existing penetration and rerouting of new piping to the new penetration. See Drawing P-4.

- Install temporary pipe plugs.

- Cap or plug both ends of the existing 4-in. PWL-1133C penetration in the WL-101/102 Tank Vault and in the Evaporation Cell #1. See Drawing P-2.

- Core drill new, straight penetration through 4-ft thick reinforced concrete wall from the Evaporation Cell #1 to the WL-101/102 tank vault. This core drill will be at an angle of approximately 20 degrees, sloping down from the Evaporation Cell #1 to the WL-101/102 tank vault. The center of the core in the Evaporation Cell will be approximately 1 ft above the floor level and will enter the WL-101/102 tank vault approximately 14 ft 6 in. above the floor level. The core will penetrate the 11-gage stainless steel wall liner in the Evaporation Cell. The water used during drilling will be contained.

- Install sleeve through the core drill between the Cell and the Tank Vault and grout. See Drawing P-4. Sleeve shall be stainless steel piping, schedule 10S, in accordance with ASTM A814 Grade TP-304L. Install plate in the Evaporation Cell #1 and seal weld to penetration sleeve and to cell wall liner.

- Remove temporary pipe plugs.

- Install new 4-in. piping from 4-in. PWL-1134C in the WL-101/102 tank vault, through the new sleeve, and to 4-in. PWL-1139C in the Evaporation Cell #1. See Drawing P-2. Piping shall be stainless steel, schedule 40S, ASTM A814 Grade TP304L, with socket weld fittings, in accordance with ASTM A403.

- Remove temporary pipe supports installed above.

- Perform welding inspections and vacuum box leak testing on all process piping welds and liner penetrations in accordance with ASME B31.3 for Category M fluids.

- Return 4-in. PWL-1133C and connected piping to operating status by removing lock and tags on isolated valves. Operations will direct the desired position for all valves.

2.4.4.4. Restoration of Work Area for the WL-101/102 Tank Vault for 4-in. PWL-1133C

- Remove scaffolding from the WL-101/102 tank vault.

- Remove temporary shielding from the WL-101/102 tank vault.

- Remove water from vessels (Operations function) in the WL-101/102 tank vault.

- Remove ladder from the WL-101/102 tank vault.

- Remove ventilation systems from the WL-101/102 tank vault.

- Replace hatch cover to WL-101/102 tank vault using pipe and chain hoist.

2.4.4.5. Restoration of System and Work Area for the Evaporation Cell #1 for 4-in. PWL-1133C

- Leave local exhaust system in the Evaporation Cell #1 for work on line 1 ½-in. PWL-2091C penetrations and 12-in. PSA-105551.

- Leave water in selected vessels for work on line 1 ½-in. PWL-2091C penetrations and 12-in. PSA-105551.

- Leave additional radiation shielding for work on line 1 ½-in. PWL-2091C penetrations and 12-in. PSA-105551.

2.4.5. 1 ½-in. PWL-2091C (2 Penetrations)

This line serves as a gravity feed line from VES-WL-109 to VES-WL-161. The line runs from the Evaporation Cell #1, through the cell wall to the Separation and Condensate Cell, through a valve manifold and bypass piping, back through the cell wall to the Evaporation Cell #1. These penetrations are between 16 and 17 ft above the floor of both cells. The existing penetrations are larger than the piping running through them, and are sufficient for the insertion of a sleeve with no core drilling. The work will require the following steps:

2.4.5.1. Access Preparation for the Evaporation Cell #1 for 1 ½-in. PWL-2091C Penetrations

- Partial access preparation for this cell has been provided in the steps for 4-in. PWL-1133C.

- Install scaffolding as required to provide access to the two 1 ½-in. PWL-2091C penetrations. The line penetrations are located in the south wall of the Evaporator Cell and are between 16 and 17 ft above the floor level and less than 6 ft apart. Tube and clamp scaffolding will be used to access the penetrations, complying with all requirements of PRD-2004. The scaffolding will be provided with adjustable jacks to accommodate the sloping floor of the cell and guardrails for fall protection. The working platform is required to be approximately 12 ft above the cell floor to provide sufficient access to the pipe and penetrations. This height will require stacking of the scaffold; therefore, the scaffold will be tied off using existing inserts in the cell wall, providing the necessary stability for the scaffolding. Relocation of the scaffold a few feet along the wall may be necessary to access each penetration.

- Install additional radiation shielding as required and as directed by Radiological Control to reduce radiation exposure to workers.

2.4.5.2. Work Description for 1 ½-in. PWL-2091C Penetrations

- Isolate 1 ½-in. PWL-2091C.

- Install temporary pipe supports for 1 ½-in. PWL-2091C on both sides of cell wall. Supports in the Separation and Condensate Cell may be to the floor to avoid the installation of scaffolding in this cell.

- Cut and remove sections of 1 ½-in. PWL-2091C in the Evaporator Cell #1 to allow room for installation of sleeves. See Drawing P-2.

- Install new sleeves (see 2.4.5.5) through the existing wall penetrations. Sleeves shall be stainless steel, schedule 10S in accordance with ASTM

A814 Grade TP-304L, or 11-gage sheet steel in accordance with ASTM A240. See Drawing P-4.

- Install new piping to reconnect 1 ½-in. PWL-2091C at both penetrations. Piping shall be stainless steel, schedule 40S, ASTM A814 Grade TP304L, with socket weld fittings, in accordance with ASTM A403.

- Remove temporary pipe supports installed above.

- Perform welding inspections and vacuum box leak testing on all process piping welds in accordance with ASME B31.3 for Category M fluids.

- Return 1 ½-in. PWL-2091C and connected piping and vessels to operating status. Operations will direct the desired position for all valves.

2.4.5.3. Restoration of System and Work Area for the Evaporation Cell #1 for 1 ½-in. PWL-2091C Penetrations

- Leave scaffolding for work on 12-in. PSA-105551.

- Leave temporary shielding in Evaporation Cell #1 for work on 12-in. PSA-105551.

- Leave water in selected vessels in the Evaporation Cell #1 for work on 12-in. PSA-105551.

- Leave local exhaust system in the Evaporation Cell #1 for work on 12-in. PSA-105551.

2.4.5.4. Restoration of System and Work Area for the Separation and Condensate Cell for 1 ½-in. PWL-2091C Penetrations

- Leave local exhaust system in the Separation and Condensate Cell for work on line 12-in. PSA-105551 and line 1 ½-in. PWL-2068C penetrations.

- Leave water in selected vessels for work on line 12-in. PSA-105551 and line 1 ½-in. PWL-2068C penetrations.

- Leave additional radiation shielding for work on line 12-in. PSA-105551 and line 1 ½-in. PWL-2068C penetrations.

2.4.5.5. Alternate Sleeve for 1 ½-in. PWL-2091C Penetrations

It is possible that a circular sheet steel sleeve may be installed around these penetrations without cutting the pipes and installing a pipe sleeve. This would involve

the fabrication of a sheet steel sleeve with a longitudinal cut to allow for the sleeve to be slid over the existing piping. The sleeve could be compressed around the circumference by allowing the material to overlap at the longitudinal cut. The sleeve could be installed in the existing oversized penetration and allowed to expand once inside the penetration. This sleeve would not provide complete containment, but may be acceptable. Further investigation is required during Title Design especially since VES-WL-109 cannot be emptied easily.

2.4.6. 12-in. PSA-105551

This line serves as an off-gas line between VES-WL-161/162 and HE-WL-301. The line runs from VES-WL-161/162 in the Evaporation Cell #1, through the cell wall to the Separation and Condensate Cell, and to HE-WL-301. This penetration is approximately 33 ft above the floor of both cells. The existing penetration is larger than the piping running through it, and there is sufficient room for the insertion of a sleeve with no core drilling. The work will require the following steps:

2.4.6.1. Access Preparation for the Evaporation Cell #1 for 12-in. PSA-105551

- Partial access preparation for this cell has been provided in the steps for 4-in. PWL-1133C.

- Install scaffolding as required to provide access to the 12-in. PSA-105551 penetration. The line penetration is located in the south wall of the cell and is approximately 33 ft above the floor level. Use the tube and clamp scaffolding left from the work on 1 ½-in. PWL-2091C. Additional sections are required to be stacked on this scaffolding to provide a working platform at a height of approximately 27 ft 6 in. above the floor level. The scaffold will be tied off using existing inserts in the cell wall to provide the necessary stability.

- Install additional radiation shielding as required and as directed by Radiological Control to reduce radiation exposure to workers.

2.4.6.2. Access Preparation for the Separation and Condensate Cell for 12-in. PSA-105551

- Partial access preparation for this cell has been provided in the steps for 4-in. PWL-1133C.

- Install additional radiation shielding as required and as directed by Radiological Control to reduce radiation exposure to workers.

2.4.6.3. Work Description for 12-in. PSA-105551

- Isolate 12-in. PSA-105551.

- Install temporary pipe supports for 12-in. PSA-105551 on both sides of cell wall. Pipe support in the Separation and Condensate Cell may be floor mounted to avoid the installation of scaffolding in this cell.

- Cut and remove 12-in. PSA-105551 elbow and piping to allow for installation of sleeve as shown on drawing P-2.

- Install new sleeve (see 2.4.6.6) through the existing wall penetration. Sleeve shall be stainless steel pipe, schedule 10S, in accordance with ASTM A814 Grade TP-304L, or 11-gage sheet steel in accordance with ASTM A240. See Drawing P-4.

- Install new piping to reconnect 12-in. PSA-105551. Piping shall be Nitronic 50 stainless steel, centrifugally cast, schedule 40S, ASTM A351 Grade CG6MMN, with socket weld fittings, seamless wrought stainless steel, in accordance with ASTM A403 Class WP-S Grade XM-19.

- Remove temporary pipe supports installed above.

- Perform welding inspections and vacuum box leak testing on all process piping welds in accordance with ASME B31.3 for Category M fluids.

- Return 12-in. PSA-105551 and connected vessels to operating status by removing lock and tags on isolated valves. Operations will direct the desired position for all valves.

2.4.6.4. Restoration of System and Work Area for the Evaporation Cell #1 for 12-in. PSA-105551

- Remove scaffolding from Evaporation Cell #1.

- Remove temporary shielding from the Evaporation Cell #1.

- Remove water from selected vessels in the Evaporation Cell #1.

- Relocate local exhaust system to be used as required to reduce contamination spread from work area.

2.4.6.5. Restoration of System and Work Area for the Separation and Condensate Cell for 12-in. PSA-105551

- Leave water in selected vessels for work on line 1 ½-in. PWL-2068C penetration.

- Leave additional radiation shielding for work on line 1 ½-in. PWL-2068C penetration.

2.4.6.6. Alternate Sleeve for 12-in. PSA-105551

It is possible that a half-circular sheet steel sleeve may be installed around this penetration without cutting the pipe and installing a pipe sleeve. This would involve the fabrication of a half circle sheet steel sleeve cut to allow for the sleeve to be slid over the elbow on the piping. The sleeve would only be on the bottom of the penetration, and would not provide complete containment, but may be acceptable. Further investigation is required during Title Design.

2.4.7. 1 ½-in. PWL-2068C

This line serves as a discharge line from the collection tanks in the Separation and Condensate Cell to the LET&D Process. The line runs from the Separation and Condensate Cell, through the cell wall to the Pipe Corridor, and to the LET&D Process. This penetration is approximately 19 ft 6 in. above the floor of the Separation and Condensate Cell, and approximately 7 ft above the floor of the Pipe Corridor. It is desired to perform all work from the Pipe Corridor to avoid elevated work in the Separation and Condensate Cell. The work will require the following steps:

2.4.7.1. Access Preparation for the Separation and Condensate Cell for 1 ½-in. PWL-2068C

- Partial access preparation for this cell has been provided in the steps for 4-in. PWL-1133C. See Section 2.4.4.2.

- Install additional radiation shielding as required and as directed by Radiological Control to reduce radiation exposure to workers.

2.4.7.2. Access Preparation for the Pipe Corridor for 1 ½-in. PWL-2068C

- Install scaffolding or adequate platform for access to the 1 ½-in. PWL-2068C penetration. The line penetration is located in the east wall of the corridor and is approximately 7 ft above the floor level. The working platform is required to be approximately 2 to 3 ft above the corridor floor to provide sufficient access to the pipe and penetration. Tube and clamp scaffolding or other portable work platform will be used to access the penetration.

- Decontaminate area as directed by Radiological Control.

2.4.7.3. Work Description for 1 ½-in. PWL-2068C

- Isolate 1 ½-in. PWL-2068C.

- Install temporary pipe supports in the Pipe Corridor for line 1 ½-in. PWL-2067C adjacent to the pipe cut described below.

- Install temporary floor-mounted pipe support in the Separation and Condensate Cell for line 1 ½-in. PWL-2067C near the wall penetration.

- Cut and remove section of 1 ½-in. PWL-2068C in the Pipe Corridor to allow access for core drill equipment. See Drawing P-2.

- Install temporary pipe plugs.

- Core drill new straight penetration through 18-in. thick reinforced concrete wall from the Pipe Corridor to the Separation and Condensate Cell.

- Install new sleeve through the core hole and grout. See Drawing P-4. Sleeve shall be 2 ½-in. nominal stainless steel piping, schedule 10S, in accordance with ASTM A814 Grade TP-304L.

- Remove temporary pipe plugs.

- Install new 1 ½-in. piping from 1 ½-in. PWL-2067C in the Pipe Corridor, through the new sleeve, and to 1 ½-in. PWL-2067C in the Separation and Condensate Cell. Piping shall be stainless steel, schedule 40S, ASTM A814 Grade TP304L, with socket weld fittings, in accordance with ASTM A403.

- Remove temporary pipe supports installed above.

- Perform welding inspections and vacuum box leak testing on all process piping welds and liner penetrations in accordance with ASME B31.3 for Category M fluids.

- Return 1 ½-in. PWL-2068C and connected piping to operating status by removing lock and tags on isolated valves. Operations will direct the desired position for all valves.

2.4.7.4. Restoration of System and Work Area for the Separation and Condensate Cell for 1 ½-in. PWL-2068C

- Remove temporary shielding from the Separation and Condensate Cell.

- Remove water from selected vessels in the Separation and Condensate Cell.

- Remove local exhaust system from the Separation and Condensate Cell.

2.4.7.5. Restoration of System and Work Area for the Pipe Corridor for 1 ½-in. PWL-2068C

- Remove scaffolding/access platform from the Pipe Corridor.
- Remove any shielding installed from the Pipe Corridor.

2.4.8. 1 ½-in. PWL-2069C

This line serves as a discharge line from the collection tanks in the Separation and Condensate Cell to the LET&D Process. It is a continuation of the above 1 ½-in. PWL-2068C. The line runs from the 1 ½-in. PWL-2068C penetration in the Pipe Corridor, through the ceiling of the Pipe Corridor into the Operating Corridor, through the south wall into CPP-605, and to the LET&D Process. This penetration is approximately 8 ft above the floor of the Operating Corridor. The work will require the following steps:

2.4.8.1. Access Preparation for the Operating Corridor for 1 ½-in. PWL-2069C

- Install scaffolding or adequate platform for access to the 1 ½-in. PWL-2069C penetration. The line penetration is located in the south wall of the corridor and is approximately 8 ft above the floor level. The working platform is required to be approximately 2 to 3 ft above the corridor floor to provide sufficient access to the pipe and penetration. Tube and clamp scaffolding or other portable work platform will be used to access the penetration.
- Decontaminate area as directed by Radiological Control.

2.4.8.2. Access Preparation for CPP-605 for 1 ½-in. PWL-2069C

- Install scaffolding or adequate platform for access to the 1 ½-in. PWL-2069C penetration. The line penetration is located in the north wall of the corridor and is approximately 8 ft above the floor level. The working platform is required to be approximately 2 to 3 ft above the corridor floor to provide sufficient access to the pipe and penetration. Tube and clamp scaffolding or other portable work platform will be used to access the penetration.
- Decontaminate area as directed by Radiological Control.

2.4.8.3. Work Description for 1 ½-in. PWL-2069C

- Isolate 1 ½-in. PWL-2069C.

- Install temporary pipe supports in the Operating Corridor for line 1 ½-in. PWL-2069C adjacent to the pipe cut described below.

- Install temporary pipe support in CPP-605 for line 1 ½-in PWL-2069C adjacent to the pipe cut described below.

- Cut and remove section of 1 ½-in. PWL-2069C in the Operating Corridor to allow for capping existing penetration and rerouting of pipe to new penetration. See Drawing P-2.

- Cut and remove section of 1 ½-in. PWL-2069C in CPP-605 to allow for capping existing penetration and rerouting of pipe to new penetration. See Drawing P-2.

- Cap existing penetration 1 ½-in. PWL-2069C in both the Operating Corridor and in CPP-605. Caps shall be 1 ½-in. stainless steel socket weld caps or 1 ½-in. stainless steel butt-weld caps in accordance with ASTM A814 Grade TP-304L. These welds need not be inspected or pressure tested.

- Core drill new straight penetration through 24-in. thick reinforced concrete wall.

- Install new sleeve through the core hole and grout from the CPP-605 side. See Drawing P-4. Sleeve shall be 2 ½-in. nominal stainless steel piping, schedule 10S, in accordance with ASTM A814 Grade TP-304L.

- Install new 1 ½-in. piping from 1 ½-in. PWL-2069C in the Operating Corridor, through the new sleeve, and to 1 ½-in. PWL-2069C in CPP-605. Piping shall be stainless steel, schedule 40S, ASTM A814 Grade TP304L, with socket weld fittings, in accordance with ASTM A403.

- Remove temporary pipe supports installed above.

- Perform welding inspections and vacuum box leak testing on all process piping welds in accordance with ASME B31.3 for Category M fluids.

- Return 1 ½-in. PWL-2069C and connected piping to operating status by removing lock and tags on isolated valves. Operations will direct the desired position for all valves.

2.4.8.4. Restoration of System and Work Area in the Operating Corridor for 1 ½-in. PWL-2069C

- Remove scaffolding/access platform from the Operating Corridor.

2.4.8.5. *Restoration of System and Work Area in CPP-605 for 1 ½-in. PWL-2069C*

- Remove scaffolding/access platform from CPP-605.

3. PROJECT COST

A cost estimate has been prepared for this conceptual design. A data recapitulation, a project summary, and a detailed cost estimate are provided in Appendix B. A total estimated cost summary table is shown below. This estimate is based on information received by the design team.

3.1. Summary of Cost

Table 1. Total Estimated Cost

	Estimate Subtotal	Escalation	Contingency	Total
Total Estimated Cost (TEC)	$1,519,839	4.89% $74,349	27.44% $437,452	$2,031,641
Rounded TEC (to the nearest $10000)				$2,030,000

3.2. Cost Risk / Contingency Analysis

Standard procedures for the preparation of an estimate require the inclusion of contingency to address possible, but unlikely or unplanned events; therefore, contingency dollars have been included in this estimate.

Contingency to cover the risks associated with this project and level of estimate has been included at rates derived from a risk analysis. The overall contingencies for this estimate were calculated based upon percentages that are a weighted average of the individual component contingencies within the estimate. These individual contingencies range from a lower value where the project team felt the risks would be non-existent to minimal, to a higher value for the higher risk areas of the project. These values, as the identified range, represent the project team's subjective determination of the risks inherent in the different levels of the estimate and the values recommended for these risks.

A risk application tool was used to arrive at the contingency used for this estimate, which linked the Success estimating software with @RISK risk analysis software. In the @RISK program, the key estimated cost summary levels were assigned low and high values. These values represent possible variations in the final cost of that level, and a degree of confidence in the accuracy and completeness of the information provided to the

estimator. These bounding values were then run through a Latin Hypercube sampling simulation 2,000 times to arrive at the additional money required to address risk at various levels of confidence. The risk output is shown both tabular form and graphically. The calculated risk amounts, represented as percentages of the appropriate levels, were applied to the estimate levels to give the most-likely cost including risk. These risk analyses for an 85% confidence level resulted in the overall contingencies that are reflected in the summary sheets of the estimates.

4. PROJECT SCHEDULE

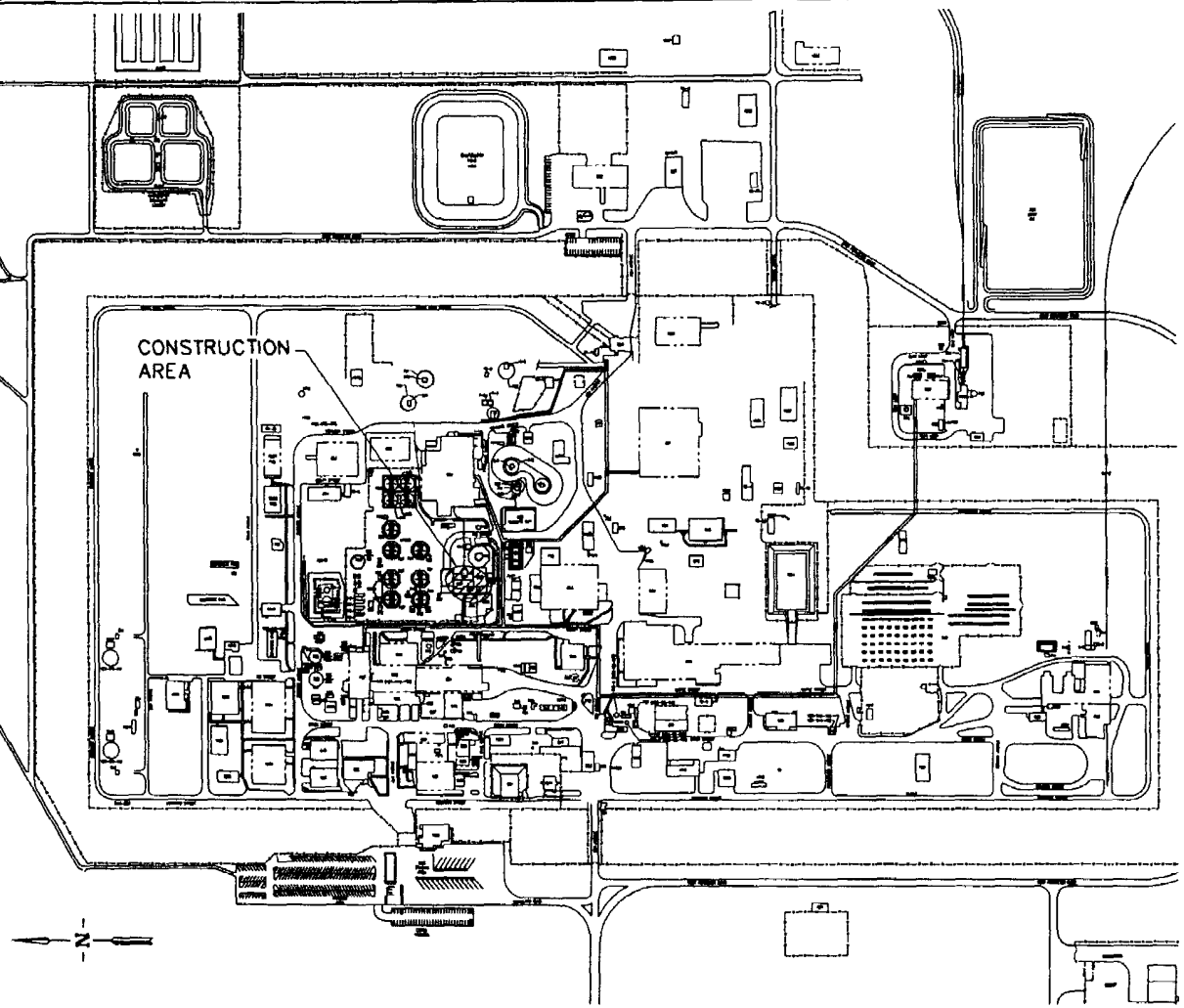
The title design work will be accomplished by BBWI ICP Central Engineering Services. The design work will commence no later than January 2004 and complete by September 30, 2004. The construction will be accomplished by BBWI Direct Hire and will be done in FY-2005.

5. APPENDICES

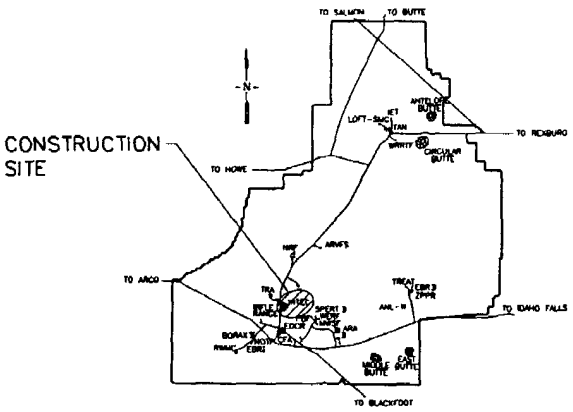
A. Project Conceptual Design Drawings
B. Cost Estimate

Appendix A

Project Conceptual Design Drawings



INTEC AREA MAP
SCALE: 1"=200.0'
BASED ON SITE SPECIFIC DATUM



INEEL SITE MAP
SCALE: NONE

REVISIONS		
REV	DESCRIPTION	EFFECTIVE DATE

DRAWING INDEX

PAGE NO.	DWG NO.	A-E DWG NO.	REV	DRAWING TITLE
1		T-1		SITE MAP, AREA MAP AND DRAWING INDEX
2		A-1		ACCESS PLAN
3		P-1		LOCATION PLAN AND PENETRATION IDENTIFICATION TABLE
4		P-2		DEMOLITION/INSTALLATION PLAN
5		P-3		SECTIONS
6		P-4		SECTIONS, DETAIL AND PENETRATION CHART

FOR DRAWING INDEX SEE DRAWING NO. T-1

SCALE: 1" = 200.0'

DESIGN PHASE: CONCEPTUAL

SAFETY CATEGORY: LSC

SUBCONTRACT NO. N/A

DRAWN: BOB HENDERSHOT

PROJECT NO. 23799

SPEC CODE

FOR REVIEW/APPROVAL SIGNATURES

SEE BAR NO.

EFFECTIVE DATE

INEEL

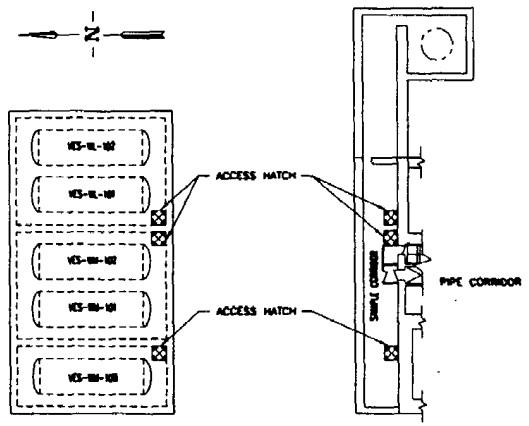
INEEL
CPP-604 EMBEDDED LINES PROJECT

SITE MAP, AREA MAP AND DRAWING INDEX

SIZE	CAGE CODE	DRAWING NUMBER	REV
D	01MF3	23799 10100 011660	

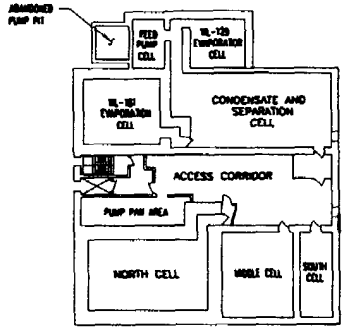
SCALE: NOTED

SHEET T-1

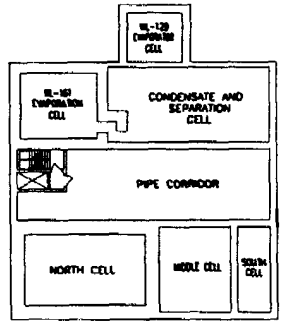


TANK VAULTS
ELEV -22'-0" AT HATCH TOP
ELEV -42'-0" AT VAULT BOTTOM

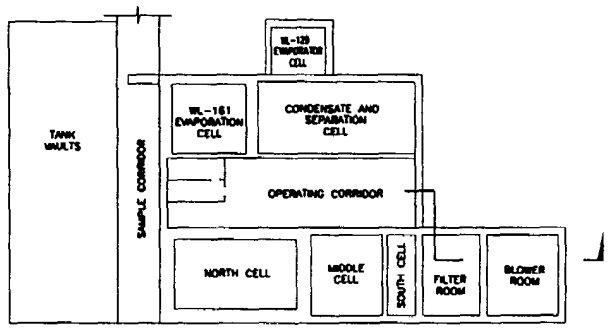
SAMPLE CORRIDOR
ELEV. -22'-0"



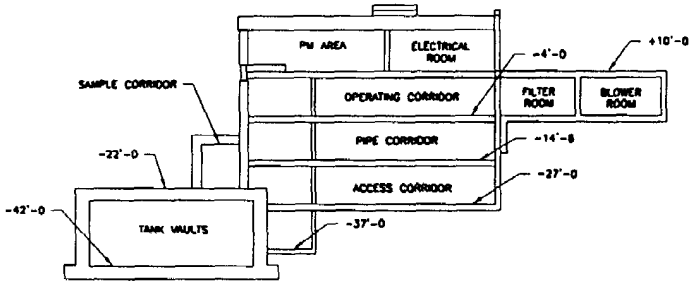
ACCESS CORRIDOR LEVEL
ELEV. -27'-0"



PIPE CORRIDOR LEVEL
ELEV. -14'-6



ACCESS KEY PLAN

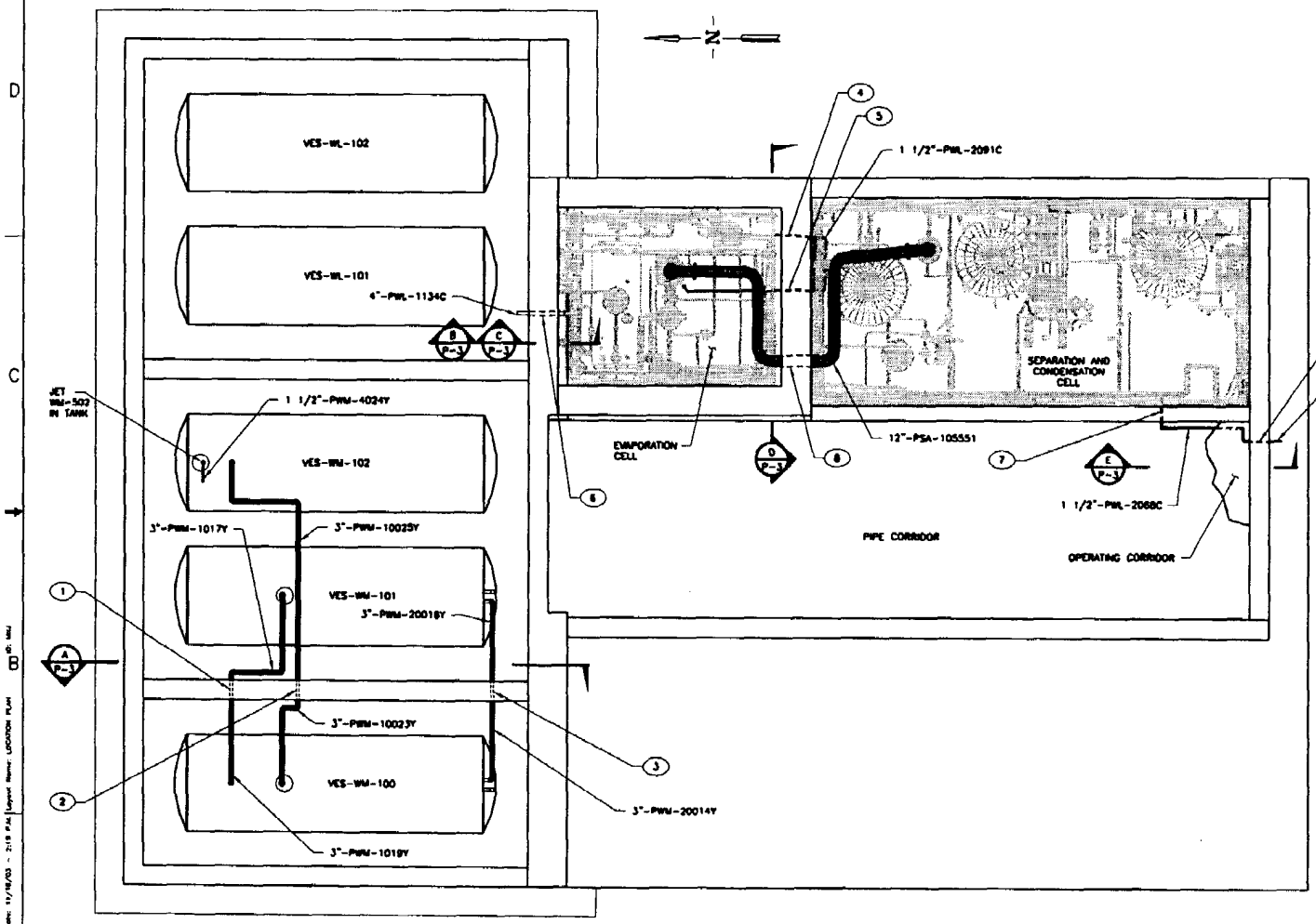


SECTION

FOR DRAWING INDEX SEE DRAWING NO. T-1	SUBCONTRACT NO. N/A	INEEL
SCALE 1/16" = 1'-0"	INITIATOR ERR RODGERS DESIGN RANDY UPPERT DRAWN ROB MERGENTHALER PROJECT NO. 23799 SPEC CODE	INEEL CPP-604 EMBEDDED LINES PROJECT ACCESS PLAN
DESIGN PHASE CONCEPTUAL SAFETY CATEGORY: LSC	FOR REVIEW/APPROVAL SIGNATURES SEE DWG NO. EFFECTIVE DATE:	TYPE D CODE 01MF3 PROJECT CODE NUMBER 200 1604 100 1000 DWG- REV SCALE 1/16"=1'-0" SHEET A-1

REVISIONS

REV	DESCRIPTION	EFFECTIVE DATE



LOCATION PLAN

PENETRATION IDENTIFICATION TABLE		
ⓧ	PENETRATION NUMBER	FUNCTION
1	3"-PWM-1018Y	JET TRANSFER LINE FROM WM-101 TO WM-100
2	3"-PWM-10024Y	JET TRANSFER LINE FROM WM-100 TO WM-102
3	3"-PWM-20015Y	OVERFILL LINE BETWEEN WM-100/WM-101
4	1 1/2"-PWL-2091C	TRANSFER LINE FROM VES-WL-109 TO VES-WL-101
5	1 1/2"-PWL-2091C	TRANSFER LINE FROM VES-WL-109 TO VES-WL-101
6	4"-PWL-1133C	EVAPORATORS DISCHARGE LINE TO VES-WL-101
7	1 1/2"-PWL-2068C	DISCHARGE LINE FROM THE COLLECTION TANKS TO THE LET&D PROCESS
8	12"-PSA-105551	OFF GAS LINE
9	1 1/2"-PWL-2068C	DISCHARGE LINE FROM THE COLLECTION TANKS TO THE LET&D PROCESS

REVISIONS		
REV	DESCRIPTION	EFFECTIVE DATE

FOR DRAWING INDEX SEE DRAWING NO. T-1

SCALE: 1/16" = 1'-0"

DESIGN PHASE: CONCEPTUAL

SAFETY CATEGORY: LSC

SUBCONTRACT NO. N/A

REQUESTED: RM ROGERS

DESIGN: MARK POPE

DRAWN: ROB HORNEMAN

PROJECT NO. 23799

SPCL CODE

FOR REVIEW/APPROVAL SIGNATURES

SEE BAR NO.

EFFECTIVE DATE

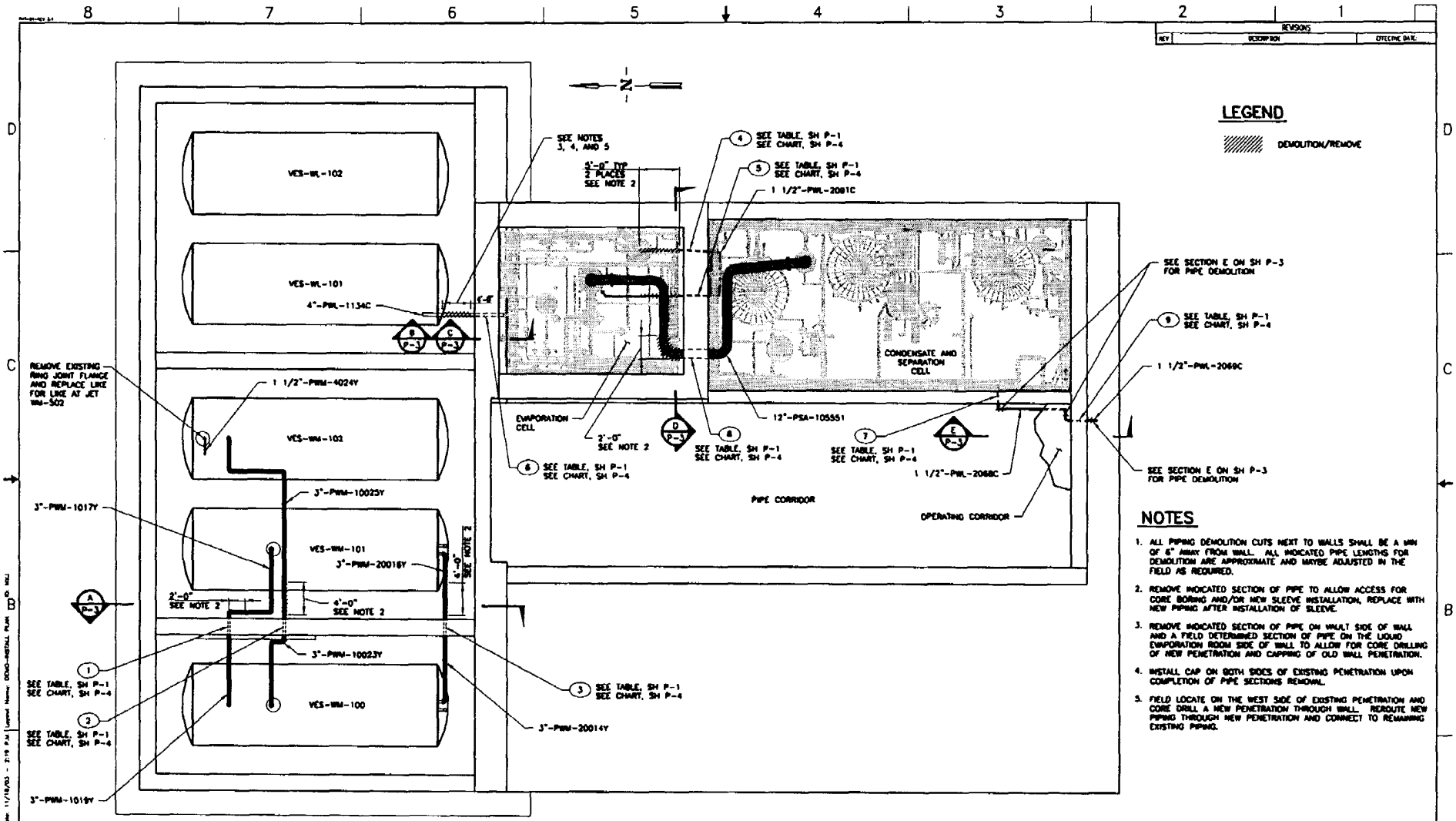
INEEL

INEEL
CPP-604 EMBEDDED LINES PROJECT

LOCATION PLAN AND PENETRATION IDENTIFICATION TABLE

SIZE	CAGE CODE	DWG CODE NUMBER					DISC	REV
D	01MF3	204	199	16	000		-	
		200	0004	50	000			

SCALE: 1/16"=1'-0" SHEET P-1



LEGEND

DEMOLITION/REMOVE

NOTES

1. ALL PIPING DEMOLITION CUTS NEXT TO WALLS SHALL BE A MIN OF 6" AWAY FROM WALL. ALL INDICATED PIPE LENGTHS FOR DEMOLITION ARE APPROXIMATE AND MAYBE ADJUSTED IN THE FIELD AS REQUIRED.
2. REMOVE INDICATED SECTION OF PIPE TO ALLOW ACCESS FOR CORE BORING AND/OR NEW SLEEVE INSTALLATION, REPLACE WITH NEW PIPING AFTER INSTALLATION OF SLEEVE.
3. REMOVE INDICATED SECTION OF PIPE ON VAULT SIDE OF WALL AND A FIELD DETERMINED SECTION OF PIPE ON THE LIQUID EVAPORATION ROOM SIDE OF WALL TO ALLOW FOR CORE DRILLING OF NEW PENETRATION AND CAPPING OF OLD WALL PENETRATION.
4. INSTALL CAP ON BOTH SIDES OF EXISTING PENETRATION UPON COMPLETION OF PIPE SECTIONS REMOVAL.
5. FIELD LOCATE ON THE WEST SIDE OF EXISTING PENETRATION AND CORE DRILL A NEW PENETRATION THROUGH WALL. REROUTE NEW PIPING THROUGH NEW PENETRATION AND CONNECT TO REMAINING EXISTING PIPING.

DEMO/INSTALL PLAN

SEE NOTE 1

FOR DRAWING INDEX SEE DRAWING NO.	T-1
SCALE: 3/16" = 1'-0"	
DESIGN PHASE: CONCEPTUAL	
SAFETY CATEGORY:	LSC
SUBCONTRACT NO.	N/A
REQUESTER:	RON ROGERS
DESIGN:	MARK POPE
DRAWN:	ROB HERZENBERG
PROJECT NO.	23799
SPCL CODE	
EFFECTIVE DATE	

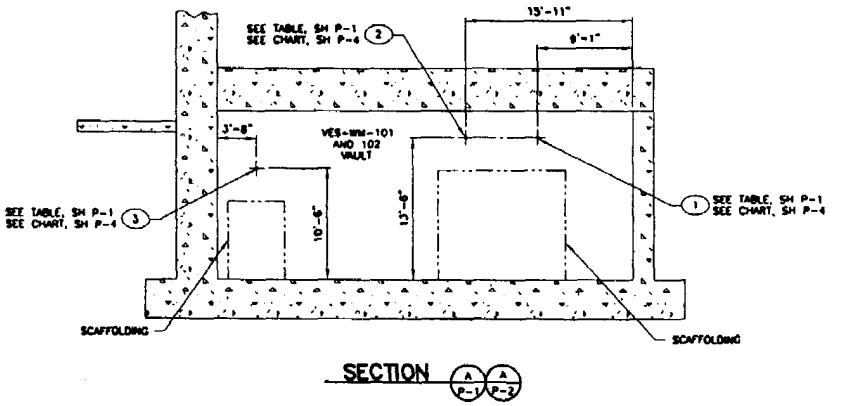
INEEL

INEEL
CPP-604 EMBEDDED LINES PROJECT

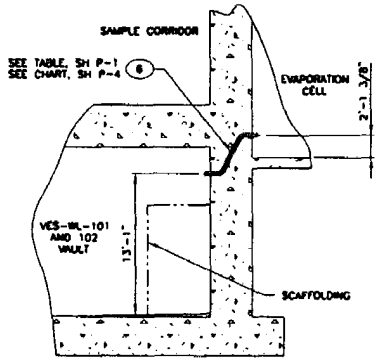
DEMOLITION/INSTALLATION PLAN

BAR	CAGE CODE	DRAWING NUMBER	REV
D	01MF3	0604	51

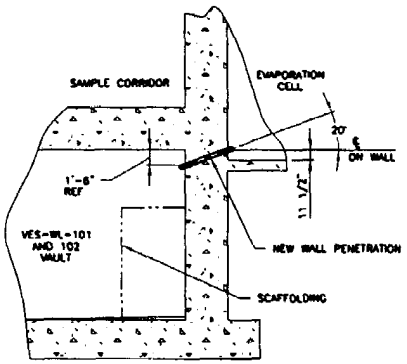
SCALE: 3/16"=1'-0" SHEET P-2



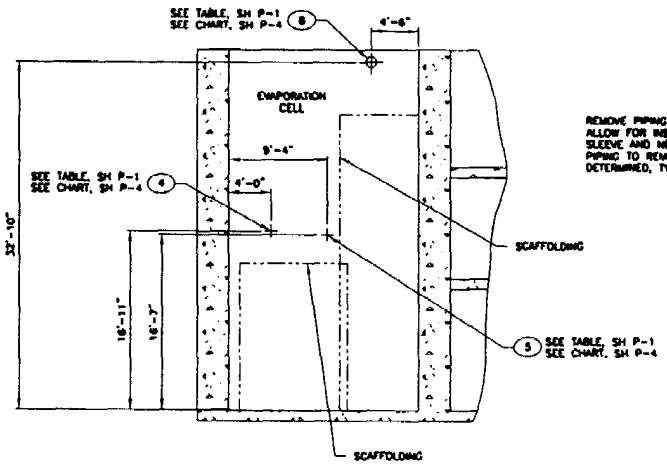
SECTION A P-1 / A P-2



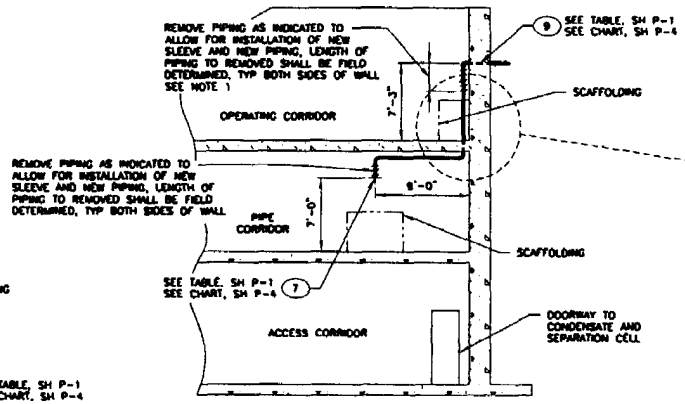
SECTION
EXISTING PENETRATION B P-1 / B P-2



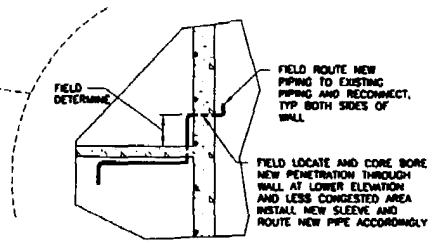
SECTION
NEW PENETRATION C P-1 / C P-2



SECTION D P-1 / D P-2



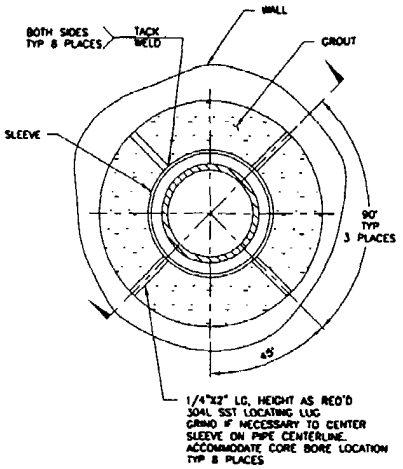
SECTION E P-1 / E P-2



NOTES

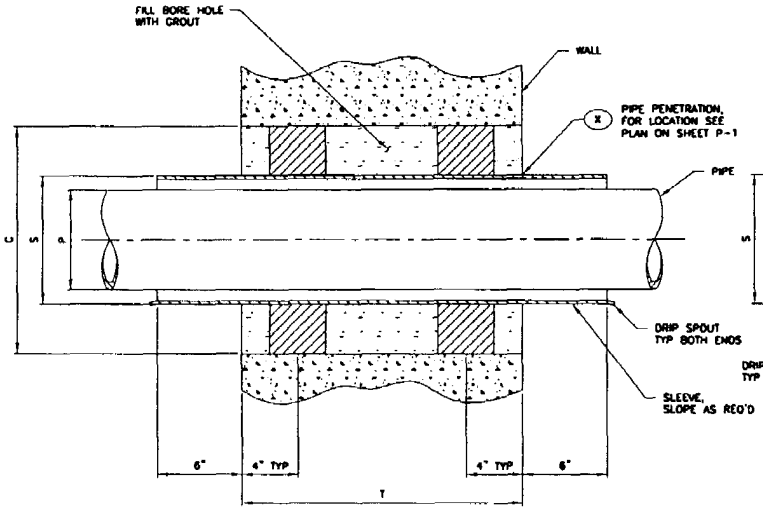
1. INSTALL CAP ON BOTH SIDES OF EXISTING PENETRATION UPON COMPLETION OF PIPE SECTIONS REMOVAL.

FOR DRAWING INDEX SEE DRAWING NO. T-1	SUBCONTRACT NO. N/A	INEEL
SCALE: 3/16" = 1'-0"	DESIGNER: KIM ROGERS	INEEL CPP-604 EMBEDDED LINES PROJECT
	DESIGN: RANDY LIPPERT	SECTIONS
	DRAWN: BOB HEIDESHEIMER	
	PROJECT NO. 23799	
DESIGN PHASE: CONCEPTUAL	SPCL. CODE	SIZE: D; CAGE CODE: 01MF3; DWG NO.; REV
SAFETY CATEGORY: LSC	FOR REVIEW/APPROVAL SIGNATURES	SCALE: 3/16"=1'-0"; SHEET: P-3
	SEE DWG NO.	
	EFFECTIVE DATE	



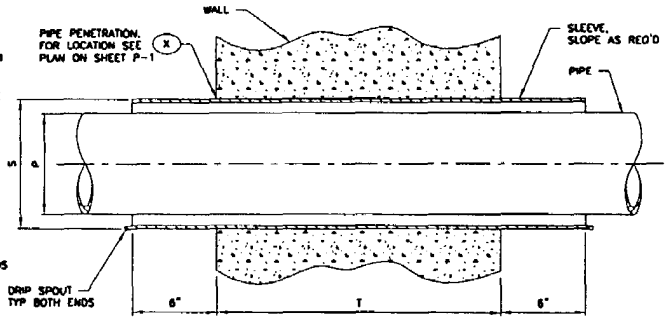
TYPICAL PIPE PENETRATION DETAIL

PENETRATIONS 1, 2, 3, 6, AND 7 SHOWN
PENETRATIONS 4, 5, AND 8 SIMILAR
SEE PIPE PENETRATION CHART
SCALE: NONE



TYPICAL PIPE PENETRATION SECTION

PENETRATIONS 1, 2, 3, 6, 7 AND 9
SEE PIPE PENETRATION CHART
SCALE: NONE



TYPICAL PIPE PENETRATION SECTION

PENETRATIONS 4,5, AND 8
SEE PIPE PENETRATION CHART
SCALE: NONE

PIPE PENETRATION CHART

(X)	PENETRATION NUMBER	PIPE SIZE "P" (NPS)	PIPE SPECIFICATION ASTM	PIPE SPECIFICATION REMARKS	PIPE SLEEVE SIZE "S" (NPS)	CORE BORE "C" MIN	WALL THK "T"	REMARKS
1	3"-PWM-1018Y	3"	A-814	SCHED 40S 304L	4"/SCHED 10S A-814 304L	8"	2'-0"	
2	3"-PWM-1002AY	3"	A-814	SCHED 40S 304L	4"/SCHED 10S A-814 304L	8"	2'-0"	
3	3"-PWM-2001SY	3"	A-814	SCHED 40S 304L	4"/SCHED 10S A-814 304L	8"	2'-0"	
4	1 1/2"-PWL-2091C	1 1/2"	A-814	SCHED 40S 304L	DIA AS REQ'D A-814 OR A-240	N/A	3'-0"	EXISTING OPENING AROUND PIPE; FABRICATE SLEEVE TO FIT OPENING
5	1 1/2"-PWL-2091C	1 1/2"	A-814	SCHED 40S 304L	DIA AS REQ'D A-814 OR A-240	N/A	3'-0"	EXISTING OPENING AROUND PIPE; FABRICATE SLEEVE TO FIT OPENING
6	4"-PWL-1133C	4"	A-814	SCHED 40S 304L	5"/SCHED 10S A-814 304L	9"	4'-0"	NEW LOCATION; CORE BORE TO SLOPE 20° DOWN FROM EWP CELL TO WL-101 VAULT
7	1 1/2"-PWL-2068C	1 1/2"	A-814	SCHED 40S 304L	2 1/2"/SCHED 10S A-814 304L	6"	1'-8"	
8	12"-PSA-1055S1	12"	A-351	SCHED 40S NITRONIC 50	DIA AS REQ'D A-814 OR A-240	N/A	3'-0"	EXISTING OPENING AROUND PIPE; FABRICATE SLEEVE TO FIT OPENING
9	1 1/2"-PWL-2068C	1 1/2"	A-814	SCHED 40S 304L	2 1/2"/SCHED 10S A-814 304L	6"	2'-0"	NEW LOCATION; CORE BORE FROM CPP-604 OPERATING CORRIDOR TO CPP-605

FOR DRAWING INDEX SEE DRAWING NO. T-1	SUBCONTRACT NO. N/A	INEEL
NO SCALE	DESIGNER: KIM ROGERS DESIGN: RANDY UPPERT DRAWN: BOB HERGESHEIMER PROJECT NO. 23799 SPEC. CODE	INEEL CPP-604 EMBEDDED LINES PROJECT SECTIONS, DETAIL AND PENETRATION CHART
DESIGN PHASE: CONCEPTUAL	FOR REVIEW/APPROVAL SIGNATURES SEE DWG NO.	SIZE D CAGE CODE 01MF3 IDENT CODE NUMBER AREA CPP FAC 604 DRG 200 0804 52 080 REV
SAFETY CATEGORY: LSC	EFFECTIVE DATE:	SCALE: NONE SHEET P-4

Appendix B

Cost Estimate Data

COST ESTIMATE SUPPORT DATA RECAPITULATION

I. **PURPOSE**: *Brief description of the intent of how the estimate is to be used, i.e., for engineering study, comparative analysis, DWP, LCB out-year planning, BCP, etc.*

This cost estimate will be used to determine a path forward for providing secondary containment for CPP-604 wall penetrations. In providing an acceptable secondary containment system for the subject penetrations, a final permit to operate the process equipment waste (PEW) can be obtained.

II. **SCOPE OF WORK**: *Brief statement of the project's objective. Thorough overview and description of the proposed project. Identify work to be accomplished, as well as any specific work to be excluded.*

The objectives of this project are to:

A. Provide secondary containment for nine pipe penetrations in CPP-604, prior to September 30, 2006.
B. Replace the ring joint flange for WM-502 jet located on top of WM-102.

These objectives will be accomplished by:

1. Core drilling concrete walls and removing concrete cores from interior walls within contaminated building radiation zones.
2. Installing secondary containment barrier sleeves and grout sleeves in wall core bores (within the secondary containment barrier sleeves). Grouting will occur within the contaminated building radiation zones.
3. Providing all support personnel required to complete the work, including task management, technical support, construction management, quality assurance, radiation engineering, operations, environmental affairs, and safety.
4. Obtaining professional engineer certification for the project.

III. **BASIS OF THE ESTIMATE**: *Overall methodology and rationale of how the estimate was developed. Source documents to include drawings, design reports, engineers' notes and/or other documentation upon which the estimate is originated. Overall explanation of sources for resource pricing.*

A. Meeting held on September 16, 2003, at CPP 1604, in which scope, schedule, and resources required for the project were discussed. Meeting notes were provided via Patrick Holmes email dated September 17, 2003.

B. Jury review held on September 25, 2003. Consensus was reached regarding scope, schedule, and resources and this is reflected in the estimate.
C. Resources and hours required for containment system (sleeve installation) are from Dave Machovec.
D. Valve Box C40 comparable professional engineer certification costs.
E. BBWI functional support organization (Project Management, Engineering, Radiation Engineering, Regulatory Integration, Safety Analysis, and Construction Management) provided estimates for their supporting efforts.
F. Waste Generator Services provided off-site shipping and treatment and disposal costs.
G. Drawings: 056692, 055962, 103562, 103569, 542-41-P752, 542-41-F730, 542-41-F-729, 094276, 096156, 356596, 057945, 094276, and 542-41-F731.
H. Standard industry references, including *R.S. Means* and *Richardson Engineering Services* cost databases, were used to help develop the estimate material pricing and productivities.

IV. **ASSUMPTIONS**: *Condition statements accepted or supposed true without proof of demonstration; statements adding clarification to scope. An assumption has a direct impact on total estimated cost.*

A. General are radiation fields in WM 100, 101, 102, and the condensate/separation cell are 100 to 300 mR, and fields in WL 101, 102, and the evaporation cell are 300 to 500 mR. Temporary shielding, including filling tanks with water, will be utilized to reduce worker exposure to 30 to 50 mR.
B. Results from USQ evaluation and screening will be negative.
C. Allowance for consequences from excessive worker radiation exposure is not included in the body of the estimate, since adequate shielding from the above mentioned fields can be achieved.
D. The proposed work scope will not exceed the activities and/or quantities as shown on the cost estimating detail sheets.
E. Design of this project will be completed in FY 2004 and construction will be completed in FY 2005.
F. INEEL site stabilization wages will apply and no overtime or shift differential has been considered for the construction efforts of this estimate.
G. Provisions have not been made for subcontracted work. It is assumed that the operating contractor's Direct Hire construction personnel will perform all of the construction work and will be available to complete this work.
H. All field activities will be performed on a 4-10 work schedule.
I. Monies have been included for the project required plan of the day (POD) and safety meetings.

J. Detail Item Report includes assumptions and comments that are specific to a detail item.
K. The waste generated (miscellaneous debris, concrete, pipe, personal protective equipment, etc.) will be: mixed low level waste contained within two standard 4 x 4 x 8 waste boxes, and will be disposed of off-site; and low level radiation waste contained within one standard 2 x 4 x 8 waste box, and will be disposed of on-site.
L. A 4-in. PWL-1133C and 1 ½ PWL-2069C penetrations will require cutting and plugging the pipe on both sides of the wall. All other penetrations can be drilled so that only a section of pipe will need to be removed to allow clearance for the core drill operation.
M. Access into the WM –101/102, and WL-101/102 cells will be necessary only for installation of grout dams, WM-502 jet ring joint flange replacement, and associated shielding and scaffolding work.
N. Only the 4-in. PWL-1133C penetration will require a seal plate welded to the existing stainless steel liner.
O. Assume there will not be sufficient clean work available on site to reassign workers who approach their radiation exposure limits.
P. Breathing air will be available in CPP-604 (or temporary breathing air can be provided at no cost to the project.)
Q. The assumed working conditions within CPP-604 will be representative of conditions at the time of the project execution.
R. Waste Generator Services support costs are included in this estimate.
S. Conceptual design efforts are not included in this TEC estimate.
T. All work is covered under the provisions of Davis-Bacon.
U. Allowance for training of the core crafts work is included in this estimate.
V. A variance to allow socket welds will be obtained.
W. This is an ICP owned project. RCT services will be purchased from INL.

V. **CONTINGENCY GUIDELINE IMPLEMENTATION:** *Explanation of methodology used in determining overall contingency. Identify any specific drivers or items of concern.*

A meeting was held September 25, 2003, with J. D. Folker, cost estimator; R. D. Adams, cost estimator; and the jury review participants. The meeting was held to establish risk parameters for each level of the estimate through use of the EM Cost Uncertainty Model Overview Easy Risk Calculator. This calculator uses three drivers (project definition, innovation, and complexity) to weigh risk of the identified element.

- **Project Definition** – the most significant of the three drivers, this represents the level of site-specific information and engineering included in the estimate. For example, a remediation project cost estimate based on a detailed engineering design would represent a higher level of project definition (and lower cost uncertainty) than a cost estimate based on a remedial investigation / feasibility study.

- **Innovation** – represents the extent to which the project relies on "tried and true" vs. new approaches. Projects with greater technical sophistication in the form of first-of-a-kind technologies are more likely to experience cost growth. There are two types of first-of-a-kind technologies: those not commercially proven, and those commercially proven technologies integrated in new and unproven ways.

- **Complexity** – measures the number of process steps required to execute a project. Past analyses indicate that the more process steps there are in a project, the greater the level of cost uncertainty.

These agreed upon parameters were used to perform a contingency analysis using the "@Risk" computer software.

"@Risk" is a risk application tool that links with the estimating software ("Success"). In "@Risk" the likely estimate key levels were assigned high and low values, equal to the low and high estimates received. These bounding values were then run through a Latin Hypercube sampling simulation 2,000 times to arrive at the additional money required to address risk at various levels of confidence. A confidence level of 85% was chosen for this report. The risk output is shown both in tabular form and graphically. The appropriate risk amount, represented as a percentage of the key level referred to above, was added to the estimate to result in a Total Estimated Cost (TEC) including risk.

Contingency for 85% confidence level has been calculated to be 27.44%.

Items of risk considered for these calculations include but are not limited to:

A. 3000-TITLE DESIGN – Possibility of multiple redesign efforts because of radiation considerations, unforeseen interferences, and unforeseen piping configurations.
B. 5000- PROJECT MANAGEMENT – Possibility of schedule delays, safety issues, quality issues, radiation issues, and redesign.
C. 9200- CONSTRUCTION- Possibility of schedule delays, safety issues, quality issues, radiation shielding and general radiation issues, and redesign. Possibility of interferences, which would impede set up of coring equipment.
D. 9300- CONSTRUCTION SUPPORT- Possibility that conditions will be encountered which will require additional radiation-con, ES&H, construction management, or other miscellaneous support.

VI. **ESTIMATE SUMMARY**: *Total dollars/hours and Rough Order Magnitude (ROM) allocations of the methodologies used to develop the cost estimate.*

Cost Elements		Estimate
Labor (BBWI)	$	1,002,624
Hours (BBWI)	Hrs	19,507
Material (BBWI)	$	119,021
ODC (Other Direct Costs)	$	33,125
Contingency	$	436,107
Total Cost	$	1,590,877

Estimate Methodology	ROM Percentage %	
SME (Unrecorded Observations)	90	%
Recorded Actuals	0	
Parametric	0	
Vendor Quotes	0	
Other	10	
Total	100	%

VII. **OTHER COMMENTS/CONCERNS SPECIFIC TO THE ESTIMATE:**

The 12 in line sleeve installation is not an RCRA requirement, but is included in this scope because of best management practice.

Summary Report

Project Name: ***CPP 604 PEWE EMBEDDED LINES***

Project Location: ***INEEL/INTEC***
Project Number: ***2723-A***

ESTIMATE ELEMENT	Estimate Subtotal	Escalation	Contingency	TOTAL
Total Estimated Cost (TEC)	**$1,519,839**	*4.89%* **$74,349**	*27.44%* **$437,452**	**$2,031,641**
Total Cost	**$1,519,839**	*4.89%* **$74,349**	*27.44%* **$437,452**	**$2,031,641**
Rounded Total Cost (Rounded to the nearest $ 10000)				**$2,030,000**

		Remarks
Type of Estimate:	Project Support	
Estimator:	R. Adams	
Checked By:		
Approved By:		

Project Summary Report

Project Name: ***CPP 604 PEWE EMBEDDED LINES***

Project Location: ***INEEL/INTEC***
Estimate Number: ***2723-A***

Client: ***C. J. Urbanski, MS 3101, 6-3581***
Prepared By: ***R. Adams***
Estimate Type: ***Project Support***

Level	Description	Estimate Subtotal	Escalation	Contingency	Contingency %	TOTAL
3000	TITLE II DESIGN - FY04	$212,148	$5,516	$32,958	15.14%	$250,621
3200	--A-E MANAGEMENT AND ADMINISTRATION	$18,656	$485	$2,898	15.14%	$22,039
3300	--ENGINEERING SERVICES	$37,135	$966	$5,769	15.14%	$43,869
3400	--DESIGN ACTIVITIES	$107,862	$2,804	$16,757	15.14%	$127,423
3500	--DRAFTING SERVICES	$30,976	$805	$4,812	15.14%	$36,594
3600	--PE CERTIFICATION	$12,000	$312	$1,864	15.14%	$14,176
3700	--COST ESTIMATE	$5,520	$144	$858	15.14%	$6,521
4000	QUALITY ASSURANCE	$14,647	$714	$3,435	22.36%	$18,796
4100	--QUALITY ASSURANCE - FY04	$2,604	$68	$597	22.36%	$3,269
4200	--QUALITY ASSURANCE - FY05	$12,043	$647	$2,837	22.36%	$15,527
5000	PROJECT MANAGEMENT	$82,930	$3,136	$20,366	23.66%	$106,432
5100	--PROJECT MANAGEMENT - FY04	$47,558	$1,237	$11,546	23.66%	$60,341
5100	----PM ADMINISTRATION	$33,978	$883	$8,249	23.66%	$43,110
5200	----PROJECT CONTROLS	$4,947	$129	$1,201	23.66%	$6,277
5300	----RECORDS MANAGEMENT	$2,028	$53	$492	23.66%	$2,573
5400	----SAFETY ANALYSIS	$1,232	$32	$299	23.66%	$1,563
5600	----ENVIRONMENTAL CHECKLIST	$5,373	$140	$1,305	23.66%	$6,817
5200	--PROJECT MANAGEMENT - FY05	$35,372	$1,899	$8,820	23.66%	$46,091
5100	----PM ADMINISTRATION	$27,489	$1,476	$6,854	23.66%	$35,819
5200	----PROJECT CONTROLS	$4,621	$248	$1,152	23.66%	$6,021
5300	----RECORDS MANAGEMENT	$3,262	$175	$813	23.66%	$4,250
9000	CONSTRUCTION	$889,886	$47,787	$283,126	30.19%	$1,220,798
9200	--DIRECT HIRE (FORCE ACCOUNT)	$476,929	$25,611	$180,154	35.85%	$682,694
9201	----GENERAL CONDITIONS	$240,693	$12,925	$90,919	35.85%	$344,537
9202	----PREP WORK	$63,689	$3,420	$24,058	35.85%	$91,166

Project Summary Report

Project Name: ***CPP 604 PEWE EMBEDDED LINES***

Project Location: ***INEEL/INTEC***
Estimate Number: ***2723-A***

Client: ***C. J. Urbanski, MS 3101, 6-3581***
Prepared By: ***R. Adams***
Estimate Type: ***Project Support***

Level	Description	Estimate Subtotal	Escalation	Contingency	Contingency %	TOTAL
9203	----4" PWL-1133C	$35,311	$1,896	$13,338	35.85%	$50,546
9204	----2" PWL-2068C	$13,939	$749	$5,265	35.85%	$19,953
9203	----1 1/2" PWL-2069C	$12,931	$694	$4,885	35.85%	$18,510
9205	----1 1/2" PWL-2091-C	$14,844	$797	$5,607	35.85%	$21,248
9206	----1 1/2" PWL-2091C	$14,844	$797	$5,607	35.85%	$21,248
9207	----12" PSA-105551	$15,136	$813	$5,717	35.85%	$21,666
9208	----3" PWM-1018Y	$19,153	$1,029	$7,235	35.85%	$27,417
9209	----3" PWM-10024Y	$19,153	$1,029	$7,235	35.85%	$27,417
9210	----3" PWM-20015Y	$19,153	$1,029	$7,235	35.85%	$27,417
9211	----3" WM-503 JET GASKET	$1,383	$74	$522	35.85%	$1,979
9212	----EXIT ACTIVITIES	$6,701	$360	$2,531	35.85%	$9,591
	--CONSTRUCTION SUPPORT	**$412,956**	**$22,176**	**$102,972**	**23.66%**	**$538,104**
	MATERIAL HANDLING/G&A	**$15,373**	**$826**	**$2,453**	**15.14%**	**$18,651**
	ICP ALLOCATION	**$304,856**	**$16,371**	**$95,115**	**29.61%**	**$416,342**
Total	**CPP 604 PEWE EMBEDDED LINES**	**$1,519,839**	**$74,349**	**$437,452**	**27.44%**	**$2,031,641**

DETAIL ITEM REPORT

Project Name: ***CPP 604 PEWE EMBEDDED LINES***

Project Location: ***INEEL/INTEC***
Estimate Number: ***2723-A***

Client: ***C. J. Urbanski, MS 3101, 6-3581***
Prepared By: ***R. Adams***
Estimate Type: ***Project Support***

Code	Description	Contractor	Qty	UOM	Hrs	Resource	Labor	Equipment	Material	Subcontractor	Other	TOTAL
3200 A-E MANAGEMENT AND ADMINISTRATION												
Memo:	***It is enticipated that the design effort (through Title II), to completion, will be November 1, 2003 to April 9, 2004 (Design 11-1-03 to 2-28-04; Review 3-1-04 to 3-12-04; Incorporate comments 3-15-04 to 3-26-04; Issue package 3-29-04 to 4-09-04). Schedule provided by K. Rogers at design meeting held on 9-18-03. Resources, hours provided by T. Sivil, based on his previous experience.***											
Z09	ICP	*U.C. per EA*			*22*	*$70.08*	*1541.76*	*0*	*0*	*0*	*0*	*1541.76*
	SUPERVISOR, SCI/ENG FUNC		2.00	EA	44	Z09	$3,084	$0	$0	$0	$0	$3,084
	Memo: Civil, Mechanical Supervision											
Z09	ICP	*U.C. per EA*			*88*	*$70.08*	*6167.04*	*0*	*0*	*0*	*0*	*6167.04*
	SUPERVISOR, SCI/ENG FUNC		1.00	EA	88	Z09	$6,167	$0	$0	$0	$0	$6,167
	Memo: Drafting Supervision											
Z04	ICP	*U.C. per EA*			*52*	*$94.72*	*4925.44*	*0*	*0*	*0*	*0*	*4925.44*
	MANAGER, SCI/ENG FUNCTION		1.00	EA	52	Z04	$4,925	$0	$0	$0	$0	$4,925
	Memo: Engineering Management											
A14	ICP	*U.C. per EA*			*52*	*$23.05*	*1198.6*	*0*	*0*	*0*	*0*	*1198.6*
	SECRETARIAL		1.00	EA	52	A14	$1,199	$0	$0	$0	$0	$1,199
	Memo: Administrative Support											
P44	ICP	*U.C. per EA*			*71*	*$46.21*	*3280.91*	*0*	*0*	*0*	*0*	*3280.91*
	PLANNING AND CONTROLS		1.00	EA	71	P44	$3,281	$0	$0	$0	$0	$3,281
	Memo: Administrative Support (Project Controls)											
	Subtotal						$18,656	$0	$0	$0	$0	$18,656
	Sales Tax						$0	$0	$0	$0	$0	$0
	INEEL/Subcontractor Overheads	0.00%					$0	$0	$0	$0	$0	$0
	Subtotal Estimate											**$18,656**
	Escalation						$485	$0	$0	$0	$0	$485
	Contingency						$2,898	$0	$0	$0	$0	$2,898
---Total 3200 A-E MANAGEMENT AND ADMINISTRATION					**307**		**$22,039**	**$0**	**$0**	**$0**	**$0**	**$22,039**

DETAIL ITEM REPORT

Project Name: ***CPP 604 PEWE EMBEDDED LINES***

Project Location: ***INEEL/INTEC***
Estimate Number: ***2723-A***

Client: ***C. J. Urbanski, MS 3101, 6-3581***
Prepared By: ***R. Adams***
Estimate Type: ***Project Support***

Code	Description	Contractor		Qty	UOM	Hrs	Resource	Labor	Equipment	Material	Subcontractor	Other	TOTAL
3300 ENGINEERING SERVICES													
E34	ICP	*U.C. per ea*				*200*	*$74.79*	*14958*	*0*	*0*	*0*	*0*	*14958*
	DESIGN PROJECT ENGINEER			1.00	ea	200	E34	$14,958	$0	$0	$0	$0	$14,958
Memo:	Field investigations, energy conservation report, tradeoff studies, etc. Technical activities including calculations, (EDFs), internal peer reviews, specifications, etc. It is anticipated that the design effort (through Title II), to completion, will be November 1, 2003 to April 9, 2004 (Design 11-1-03 to 2-28-04; Review 3-1-04 to 3-12-04; Incorporate comments 3-15-04 to 3-26-04; Issue package 3-29-04 to 4-09-04). Schedule, resources, hours provided by K. Rogers at design meeting held on 9-18-03.												
E54	ICP	*U.C. per ea*				*100*	*$60.22*	*6022*	*0*	*0*	*0*	*0*	*6022*
	OPERATIONS SYSTEM ENGINEER, NU			1.00	ea	100	E54	$6,022	$0	$0	$0	$0	$6,022
Memo:	For generation and maintenance of ECF (Engineering Change File). Resource hours provided by F. Ward at jury review held on 9-25-03. Basis of estimate is experience on similar projects.												
E34	ICP	*U.C. per ea*				*216*	*$74.79*	*16154.64*	*0*	*0*	*0*	*0*	*16154.64*
	INTEC PROJECT ENGINEER			1.00	ea	216	E34	$16,155	$0	$0	$0	$0	$16,155
Memo:	INTEC Project Engineer. 22 weeks design + 32 weeks construction = 54 weeks. 4 hours/week x 54 weeks = 216 hours												
	Subtotal							$37,135	$0	$0	$0	$0	$37,135
	Sales Tax							$0	$0	$0	$0	$0	$0
	INEEL/Subcontractor Overheads		0.00%					$0	$0	$0	$0	$0	$0
	Subtotal Estimate												**$37,135**
	Escalation							$966	$0	$0	$0	$0	$966
	Contingency							$5,769	$0	$0	$0	$0	$5,769
---Total	**3300 ENGINEERING SERVICES**					**516**		**$43,869**	**$0**	**$0**	**$0**	**$0**	**$43,869**
3400 DESIGN ACTIVITIES													
Memo:	***Technical activities including calculations, (EDFs), internal peer reviews, specifications, etc. It is anticipated that the design effort (through Title II), to completion, will be November 1, 2003 to April 9, 2004 (Design 11-1-03 to 2-28-04; Review 3-1-04 to 3-12-04; Incorporate comments 3-15-04 to 3-26-04; Issue package 3-29-04 to 4-09-04). Schedule, resources, hours provided by K. Rogers at design meeting held on 9-18-03. Basis of estimate: experience on similar projects.***												
E11	ICP	*U.C. per ea*				*440*	*$56.27*	*24758.8*	*0*	*0*	*0*	*0*	*24758.8*
	MECHANICAL ENGINEERING			1.00	ea	440	E11	$24,759	$0	$0	$0	$0	$24,759
E04	ICP	*U.C. per ea*				*440*	*$63.01*	*27724.4*	*0*	*0*	*0*	*0*	*27724.4*
	CIVIL ENGINEERING			1.00	ea	440	E04	$27,724	$0	$0	$0	$0	$27,724

DETAIL ITEM REPORT

Project Name: ***CPP 604 PEWE EMBEDDED LINES***

Project Location: ***INEEL/INTEC***
Estimate Number: ***2723-A***

Client: ***C. J. Urbanski, MS 3101, 6-3581***
Prepared By: ***R. Adams***
Estimate Type: ***Project Support***

Code	Description	Contractor	Qty	UOM	Hrs	Resource	Labor	Equipment	Material	Subcontractor	Other	TOTAL
3400 DESIGN ACTIVITIES												
Memo:	***Technical activities including calculations, (EDFs), internal peer reviews, specifications, etc. It is anticipated that the design effort (through Title II), to completion, will be November 1, 2003 to April 9, 2004 (Design 11-1-03 to 2-28-04; Review 3-1-04 to 3-12-04; Incorporate comments 3-15-04 to 3-26-04; Issue package 3-29-04 to 4-09-04). Schedule, resources, hours provided by K. Rogers at design meeting held on 9-18-03. Basis of estimate: experience on similar projects.***											
E05	ICP	*U.C. per ea*			*880*	*$62.93*	*55378.4*	*0*	*0*	*0*	*0*	*55378.4*
DESIGN			1.00	ea	880	E05	$55,378	$0	$0	$0	$0	$55,378
Subtotal							$107,862	$0	$0	$0	$0	$107,862
Sales Tax							$0	$0	$0	$0	$0	$0
INEEL/Subcontractor Overheads		0.00%					$0	$0	$0	$0	$0	$0
Subtotal Estimate												**$107,862**
Escalation							$2,804	$0	$0	$0	$0	$2,804
Contingency							$16,757	$0	$0	$0	$0	$16,757
---Total 3400 DESIGN ACTIVITIES					**1,760**		**$127,423**	**$0**	**$0**	**$0**	**$0**	**$127,423**
3500 DRAFTING SERVICES												
Memo:	***Technical activities including drafting services, internal peer reviews. It is anticipated that the design effort (through Title II), to completion, will be November 1, 2003 to April 9, 2004 (Design 11-1-03 to 2-28-04; Review 3-1-04 to 3-12-04; Incorporate comments 3-15-04 to 3-26-04; Issue package 3-29-04 to 4-09-04). 12 mechanical, 25 civil/structural drawings estimated. Schedule, resources, hours provided by K. Rogers at design meeting held on 9-18-03.***											
T03	ICP	*U.C. per ea*			*880*	*$35.20*	*30976*	*0*	*0*	*0*	*0*	*30976*
DRAFTER			1.00	ea	880	T03	$30,976	$0	$0	$0	$0	$30,976
Subtotal							$30,976	$0	$0	$0	$0	$30,976
Sales Tax							$0	$0	$0	$0	$0	$0
INEEL/Subcontractor Overheads		0.00%					$0	$0	$0	$0	$0	$0
Subtotal Estimate												**$30,976**
Escalation							$805	$0	$0	$0	$0	$805
Contingency							$4,812	$0	$0	$0	$0	$4,812
---Total 3500 DRAFTING SERVICES					**880**		**$36,594**	**$0**	**$0**	**$0**	**$0**	**$36,594**

DETAIL ITEM REPORT

Project Name: ***CPP 604 PEWE EMBEDDED LINES***

Project Location: ***INEEL/INTEC***
Estimate Number: ***2723-A***

Client: ***C. J. Urbanski, MS 3101, 6-3581***
Prepared By: ***R. Adams***
Estimate Type: ***Project Support***

Code	Description	Contractor	Qty	UOM	Hrs	Resource	Labor	Equipment	Material	Subcontractor	Other	TOTAL
3600 PE CERTIFICATION												
Memo:	***LS cost based on C40 valve box project PE Cert. From K. Winterholler.***											
	ICP	*U.C. per LS*					*0*	*0*	*0*	*12000*	*0*	*12000*
	Professional Engineer Certification		1.00	LS	0		$0	$0	$0	$12,000	$0	$12,000
	Subtotal						$0	$0	$0	$12,000	$0	$12,000
	Sales Tax						$0	$0	$0	$0	$0	$0
	INEEL/Subcontractor Overheads	0.00%					$0	$0	$0	$0	$0	$0
	Subtotal Estimate											**$12,000**
	Escalation						$0	$0	$0	$312	$0	$312
	Contingency						$0	$0	$0	$1,864	$0	$1,864
--Total	**3600 PE CERTIFICATION**				**0**		**$0**	**$0**	**$0**	**$14,176**	**$0**	**$14,176**
3700 COST ESTIMATE												
Memo:	***Estimating services during title II design. 100 hours based on previous experience of cost estimator on similar work at INTEC.***											
F22	ICP	*U.C. per ea*			*100*	*$52.99*	*5299*	*0*	*0*	*0*	*0*	*5299*
	COST ESTIMATING		1.00	ea	100	F22	$5,299	$0	$0	$0	$0	$5,299
P26	ICP	*U.C. per ea*			*4*	*$32.18*	*128.72*	*0*	*0*	*0*	*0*	*128.72*
	DEPT/OPS ADMIN SPEC		1.00	ea	4	P26	$129	$0	$0	$0	$0	$129
Memo:	Estimating Services administrative support @ 3.5%											

DETAIL ITEM REPORT

Project Name: ***CPP 604 PEWE EMBEDDED LINES***

Project Location: ***INEEL/INTEC***
Estimate Number: ***2723-A***

Client: ***C. J. Urbanski, MS 3101, 6-3581***
Prepared By: ***R. Adams***
Estimate Type: ***Project Support***

Code	Description	Contractor	Qty	UOM	Hrs	Resource	Labor	Equipment	Material	Subcontractor	Other	TOTAL
3700 COST ESTIMATE												
Memo:	***Estimating services during title II design. 100 hours based on previous experience of cost estimator on similar work at INTEC.***											
A14	ICP	*U.C. per ea*			*4*	*$23.05*	*92.2*	*0*	*0*	*0*	*0*	*92.2*
	SECRETARIAL		1.00	ea	4	A14	$92	$0	$0	$0	$0	$92
Memo: Estimating Services administrative support @ 3.5%												
	Subtotal						$5,520	$0	$0	$0	$0	$5,520
	Sales Tax						$0	$0	$0	$0	$0	$0
	INEEL/Subcontractor Overheads	0.00%					$0	$0	$0	$0	$0	$0
	Subtotal Estimate											**$5,520**
	Escalation						$144	$0	$0	$0	$0	$144
	Contingency						$858	$0	$0	$0	$0	$858
---Total 3700 COST ESTIMATE					**108**		**$6,521**	**$0**	**$0**	**$0**	**$0**	**$6,521**
4100 QUALITY ASSURANCE - FY04												
Memo:	***All Quality Engineering actions and Inspections-related actions that are required to plan and perform surveillance-related (oversite) activities during the execution and start-up phases of a project.***											
	ICP	*U.C. per Ea*			*40*	*$59.18*	*2367.2*	*0*	*0*	*0*	*0*	*2367.2*
	Inspection Plan Preparation		1.00	Ea	40	E17	$2,367	$0	$0	$0	$0	$2,367
Memo: Hours based on consensus reached at jury review meeting held on 9-25-03.												
	ICP	*U.C. per Hr*			*0.1*	*$59.18*	*5.918*	*0*	*0*	*0*	*0*	*5.918*
	Quality Assurance Supervision @ 10%		40.00	Hr	4	E17	$237	$0	$0	$0	$0	$237
	Subtotal						$2,604	$0	$0	$0	$0	$2,604
	Sales Tax						$0	$0	$0	$0	$0	$0
	INEEL/Subcontractor Overheads	0.00%					$0	$0	$0	$0	$0	$0
	Subtotal Estimate											**$2,604**
	Escalation						$68	$0	$0	$0	$0	$68
	Contingency						$597	$0	$0	$0	$0	$597
---Total 4100 QUALITY ASSURANCE - FY04					**44**		**$3,269**	**$0**	**$0**	**$0**	**$0**	**$3,269**

DETAIL ITEM REPORT

Project Name: ***CPP 604 PEWE EMBEDDED LINES***

Project Location: ***INEEL/INTEC***
Estimate Number: ***2723-A***

Client: ***C. J. Urbanski, MS 3101, 6-3581***
Prepared By: ***R. Adams***
Estimate Type: ***Project Support***

Code	Description	Contractor	Qty	UOM	Hrs	Resource	Labor	Equipment	Material	Subcontractor	Other	TOTAL
4200 QUALITY ASSURANCE - FY05												
Memo:	***All Quality Engineering actions and Inspections-related actions that are required to plan and perform surveillance-related (oversite) activities during the execution and start-up phases of a project.***											
	ICP	*U.C. per WKS*			*5*	*$59.18*	*295.9*	*0*	*0*	*0*	*0*	*295.9*
	Vendor Data Review and Field Problems		37.00	WKS	185	E17	$10,948	$0	$0	$0	$0	$10,948
	Memo: Hours based on consensus reached at jury review meeting held on 9-25-03.											
	ICP	*U.C. per Hr*			*0.1*	*$59.18*	*5.918*	*0*	*0*	*0*	*0*	*5.918*
	Quality Assurance Supervision @ 10%		185.00	Hr	19	E17	$1,095	$0	$0	$0	$0	$1,095
	Subtotal						$12,043	$0	$0	$0	$0	$12,043
	Sales Tax						$0	$0	$0	$0	$0	$0
	INEEL/Subcontractor Overheads	0.00%					$0	$0	$0	$0	$0	$0
	Subtotal Estimate											**$12,043**
	Escalation						$647	$0	$0	$0	$0	$647
	Contingency						$2,837	$0	$0	$0	$0	$2,837
—Total 4200 QUALITY ASSURANCE - FY05					**204**		**$15,527**	**$0**	**$0**	**$0**	**$0**	**$15,527**
5100 PM ADMINISTRATION												
Memo:	***Hours based on consensus from the jury review.***											
	ICP	*U.C. per LOT*			*4*	*$72.34*	*289.36*	*0*	*0*	*0*	*0*	*289.36*
	ORIGINATE WCF		1.00	LOT	4	E28	$289	$0	$0	$0	$0	$289
	ICP	*U.C. per LOT*			*60*	*$72.34*	*4340.4*	*0*	*0*	*0*	*0*	*4340.4*
	FINALIZE HPSC		1.00	LOT	60	E28	$4,340	$0	$0	$0	$0	$4,340
	ICP	*U.C. per Lot*			*10*	*$72.34*	*723.4*	*0*	*0*	*0*	*0*	*723.4*
	Assemble Planning Team		1.00	Lot	10	E28	$723	$0	$0	$0	$0	$723
	ICP	*U.C. per LOT*			*4*	*$72.34*	*289.36*	*0*	*0*	*0*	*0*	*289.36*
	DETERMINE PLANNING LEVEL AND UPDATE WCF		1.00	LOT	4	E28	$289	$0	$0	$0	$0	$289
	ICP	*U.C. per LOT*			*30*	*$72.34*	*2170.2*	*0*	*0*	*0*	*0*	*2170.2*
	PREPARE SUPPORTING HAZARDS PROJECT DOCUMENTATION		1.00	LOT	30	E28	$2,170	$0	$0	$0	$0	$2,170

DETAIL ITEM REPORT

Project Name: ***CPP 604 PEWE EMBEDDED LINES***

Project Location: ***INEEL/INTEC***
Estimate Number: ***2723-A***

Client: ***C. J. Urbanski, MS 3101, 6-3581***
Prepared By: ***R. Adams***
Estimate Type: ***Project Support***

Code	Description	Contractor	Qty	UOM	Hrs	Resource	Labor	Equipment	Material	Subcontractor	Other	TOTAL
5100 PM ADMINISTRATION												
Memo:	***Hours based on consensus from the jury review.***											
	ICP	*U.C. per LOT*			*80*	*$72.34*	*5787.2*	*0*	*0*	*0*	*0*	*5787.2*
	Project Execution Plan (PEP)		1.00	LOT	80	E28	$5,787	$0	$0	$0	$0	$5,787
Memo:	For preparation of PEP, incorporation of comments.											
	ICP	*U.C. per LOT*			*50*	*$74.79*	*3739.5*	*0*	*0*	*0*	*0*	*3739.5*
	Review of PEP		1.00	LOT	50	E34	$3,740	$0	$0	$0	$0	$3,740
Memo:	10 reviewers, 5 hours each.											
	ICP	*U.C. per weeks*			*10*	*$72.34*	*723.4*	*0*	*0*	*0*	*0*	*723.4*
	PROJECT MANAGEMENT		23.00	weeks	230	E28	$16,638	$0	$0	$0	$0	$16,638
Memo:	PM support for 25% of design (22 weeks) + construction (32 weeks). Based on consensus from the jury review.											
	Subtotal						$33,978	$0	$0	$0	$0	$33,978
	Sales Tax						$0	$0	$0	$0	$0	$0
	INEEL/Subcontractor Overheads	0.00%					$0	$0	$0	$0	$0	$0
	Subtotal Estimate											**$33,978**
	Escalation						$883	$0	$0	$0	$0	$883
	Contingency						$8,249	$0	$0	$0	$0	$8,249
---Total	**5100 PM ADMINISTRATION**				**468**		**$43,110**	**$0**	**$0**	**$0**	**$0**	**$43,110**
5200 PROJECT CONTROLS												
Memo:	***Cost and schedule control activities for the project (dedicated personnel only; non-dedicated personnel charge to Operating Costs).***											
P44	ICP	*U.C. per LS*			*60*	*$46.21*	*2772.6*	*0*	*0*	*0*	*0*	*2772.6*
	PLANNING AND CONTROLS		1.00	LS	60	P44	$2,773	$0	$0	$0	$0	$2,773
Memo:	PCEsupport for 5 hours/week (36 weeks). Based on consensus reached at jury review, 9-25-03. Duties include provision of project data, schedules, input to POD.											
F22	ICP	*U.C. per ea*			*40*	*$52.99*	*2119.6*	*0*	*0*	*0*	*0*	*2119.6*
	COST ESTIMATING		1.00	ea	40	F22	$2,120	$0	$0	$0	$0	$2,120
Memo:	Estimating support for construction (32 weeks). Based on experience of cost estimators.											
P26	ICP	*U.C. per ea*			*1*	*$32.18*	*32.18*	*0*	*0*	*0*	*0*	*32.18*
	DEPT/OPS ADMIN SPEC		1.00	ea	1	P26	$32	$0	$0	$0	$0	$32
Memo:	Estimating Services administrative support @ 3.5%											

DETAIL ITEM REPORT

Project Name: ***CPP 604 PEWE EMBEDDED LINES***

Project Location: ***INEEL/INTEC***
Estimate Number: ***2723-A***

Client: ***C. J. Urbanski, MS 3101, 6-3581***
Prepared By: ***R. Adams***
Estimate Type: ***Project Support***

Code	Description	Contractor	Qty	UOM	Hrs	Resource	Labor	Equipment	Material	Subcontractor	Other	TOTAL
5200 PROJECT CONTROLS												
Memo:	***Cost and schedule control activities for the project (dedicated personnel only; non-dedicated personnel charge to Operating Costs).***											
A14	ICP	*U.C. per ea*			*1*	*$23.05*	*23.05*	*0*	*0*	*0*	*0*	*23.05*
	SECRETARIAL		1.00	ea	1	A14	$23	$0	$0	$0	$0	$23
Memo: Estimating Services administrative support @ 3.5%												
	Subtotal						$4,947	$0	$0	$0	$0	$4,947
	Sales Tax						$0	$0	$0	$0	$0	$0
	INEEL/Subcontractor Overheads	0.00%					$0	$0	$0	$0	$0	$0
	Subtotal Estimate											**$4,947**
	Escalation						$129	$0	$0	$0	$0	$129
	Contingency						$1,201	$0	$0	$0	$0	$1,201
---Total 5200 PROJECT CONTROLS					**102**		**$6,277**	**$0**	**$0**	**$0**	**$0**	**$6,277**
5300 RECORDS MANAGEMENT												
Memo:	***Dedicated personnel involved with document control and records management.***											
A13	ICP	*U.C. per WKS*			*4*	*$22.04*	*88.16*	*0*	*0*	*0*	*0*	*88.16*
	RECORDS MANAGEMENT		23.00	WKS	92	A13	$2,028	$0	$0	$0	$0	$2,028
Memo: Hours based on consensus reached at jury review, 9-25-03. (for design, construction).												
	Subtotal						$2,028	$0	$0	$0	$0	$2,028
	Sales Tax						$0	$0	$0	$0	$0	$0
	INEEL/Subcontractor Overheads	0.00%					$0	$0	$0	$0	$0	$0
	Subtotal Estimate											**$2,028**
	Escalation						$53	$0	$0	$0	$0	$53
	Contingency						$492	$0	$0	$0	$0	$492
---Total 5300 RECORDS MANAGEMENT					**92**		**$2,573**	**$0**	**$0**	**$0**	**$0**	**$2,573**

DETAIL ITEM REPORT

Project Name: ***CPP 604 PEWE EMBEDDED LINES***

Project Location: ***INEEL/INTEC***
Estimate Number: ***2723-A***

Client: ***C. J. Urbanski, MS 3101, 6-3581***
Prepared By: ***R. Adams***
Estimate Type: ***Project Support***

Code	Description	Contractor	Qty	UOM	Hrs	Resource	Labor	Equipment	Material	Subcontractor	Other	TOTAL
5400 SAFETY ANALYSIS												
Memo:	***It is assumed that the rsults from the USQ evaluation will be negative.***											
X22	ICP	*U.C. per ea*			*20*	*$61.61*	*1232.2*	*0*	*0*	*0*	*0*	*1232.2*
	SAFETY ANALYSIS		1.00	ea	20	X22	$1,232	$0	$0	$0	$0	$1,232
	Memo: Hours received from Jeff Sherman based on his experience.											
	Subtotal						$1,232	$0	$0	$0	$0	$1,232
	Sales Tax						$0	$0	$0	$0	$0	$0
	INEEL/Subcontractor Overheads	0.00%					$0	$0	$0	$0	$0	$0
	Subtotal Estimate											**$1,232**
	Escalation						$32	$0	$0	$0	$0	$32
	Contingency						$299	$0	$0	$0	$0	$299
---Total 5400 SAFETY ANALYSIS					**20**		**$1,563**	**$0**	**$0**	**$0**	**$0**	**$1,563**
5600 ENVIRONMENTAL CHECKLIST												
Memo:	***For preparation, review of environmental checklist. Hours based on consensus reached at jury review on 9-25-03.***											
S21	ICP	*U.C. per ea*			*40*	*$59.54*	*2381.6*	*0*	*0*	*0*	*0*	*2381.6*
	REGULATORY COMPLIANCE - ENVIRO		1.00	ea	40	S21	$2,382	$0	$0	$0	$0	$2,382
E34	ICP	*U.C. per ea*			*5*	*$74.79*	*373.95*	*0*	*0*	*0*	*0*	*373.95*
	ENVIRONMENTAL ENGINEERING		8.00	ea	40	E34	$2,992	$0	$0	$0	$0	$2,992
	Subtotal						$5,373	$0	$0	$0	$0	$5,373
	Sales Tax						$0	$0	$0	$0	$0	$0
	INEEL/Subcontractor Overheads	0.00%					$0	$0	$0	$0	$0	$0
	Subtotal Estimate											**$5,373**
	Escalation						$140	$0	$0	$0	$0	$140
	Contingency						$1,305	$0	$0	$0	$0	$1,305
---Total 5600 ENVIRONMENTAL CHECKLIST					**80**		**$6,817**	**$0**	**$0**	**$0**	**$0**	**$6,817**

DETAIL ITEM REPORT

Project Name: ***CPP 604 PEWE EMBEDDED LINES***

Project Location: ***INEEL/INTEC***
Estimate Number: ***2723-A***

Client: ***C. J. Urbanski, MS 3101, 6-3581***
Prepared By: ***R. Adams***
Estimate Type: ***Project Support***

Code	Description	Contractor	Qty	UOM	Hrs	Resource	Labor	Equipment	Material	Subcontractor	Other	TOTAL
5100 PM ADMINISTRATION												
Memo:	***Hours based on consensus from the jury review.***											
		ICP	*U.C. per LOT*		*10*	*$72.34*	*723.4*	*0*	*0*	*0*	*0*	*723.4*
	POST JOB REVIEW		1.00	LOT	10	E28	$723	$0	$0	$0	$0	$723
		ICP	*U.C. per weeks*		*10*	*$72.34*	*723.4*	*0*	*0*	*0*	*0*	*723.4*
	PROJECT MANAGEMENT		37.00	weeks	370	E28	$26,766	$0	$0	$0	$0	$26,766
Memo: PM support for 25% of design (22 weeks) + construction (32 weeks). Based on consensus from the jury review.												
	Subtotal						$27,489	$0	$0	$0	$0	$27,489
	Sales Tax						$0	$0	$0	$0	$0	$0
	INEEL/Subcontractor Overheads	0.00%					$0	$0	$0	$0	$0	$0
	Subtotal Estimate											**$27,489**
	Escalation						$1,476	$0	$0	$0	$0	$1,476
	Contingency						$6,854	$0	$0	$0	$0	$6,854
---Total 5100 PM ADMINISTRATION					**380**		**$35,819**	**$0**	**$0**	**$0**	**$0**	**$35,819**
5200 PROJECT CONTROLS												
Memo:	***Cost and schedule control activities for the project (dedicated personnel only; non-dedicated personnel charge to Operating Costs).***											
P44		ICP	*U.C. per LS*		*100*	*$46.21*	*4621*	*0*	*0*	*0*	*0*	*4621*
	PLANNING AND CONTROLS		1.00	LS	100	P44	$4,621	$0	$0	$0	$0	$4,621
Memo: PCEsupport for 5 hours/week (36 weeks). Based on consensus reached at jury review, 9-25-03. Duties include provision of project data, schedules, input to POD.												
	Subtotal						$4,621	$0	$0	$0	$0	$4,621
	Sales Tax						$0	$0	$0	$0	$0	$0
	INEEL/Subcontractor Overheads	0.00%					$0	$0	$0	$0	$0	$0
	Subtotal Estimate											**$4,621**
	Escalation						$248	$0	$0	$0	$0	$248
	Contingency						$1,152	$0	$0	$0	$0	$1,152
---Total 5200 PROJECT CONTROLS					**100**		**$6,021**	**$0**	**$0**	**$0**	**$0**	**$6,021**

DETAIL ITEM REPORT

Project Name: ***CPP 604 PEWE EMBEDDED LINES***

Project Location: ***INEEL/INTEC***
Estimate Number: ***2723-A***

Client: ***C. J. Urbanski, MS 3101, 6-3581***
Prepared By: ***R. Adams***
Estimate Type: ***Project Support***

Code	Description	Contractor	Qty	UOM	Hrs	Resource	Labor	Equipment	Material	Subcontractor	Other	TOTAL
5300 RECORDS MANAGEMENT												
Memo:	***Dedicated personnel involved with document control and records management.***											
A13		ICP	*U.C. per WKS*		*4*	*$22.04*	*88.16*	*0*	*0*	*0*	*0*	*88.16*
	RECORDS MANAGEMENT		37.00	WKS	148	A13	$3,262	$0	$0	$0	$0	$3,262
Memo: Hours based on consensus reached at jury review, 9-25-03. (for design, construction).												
	Subtotal						$3,262	$0	$0	$0	$0	$3,262
	Sales Tax						$0	$0	$0	$0	$0	$0
	INEEL/Subcontractor Overheads		0.00%				$0	$0	$0	$0	$0	$0
	Subtotal Estimate											**$3,262**
	Escalation						$175	$0	$0	$0	$0	$175
	Contingency						$813	$0	$0	$0	$0	$813
---Total 5300 RECORDS MANAGEMENT					**148**		**$4,250**	**$0**	**$0**	**$0**	**$0**	**$4,250**
9201 GENERAL CONDITIONS												
FIELD		ICP	*U.C. per WKS*		*40*	*$40.61*	*1624.4*	*0*	*0*	*0*	*0*	*1624.4*
	STR		37.00	WKS	1,480	F27	$60,103	$0	$0	$0	$0	$60,103
FIELD		ICP	*U.C. per LS*		*30*	*$43.97*	*1319.1*	*0*	*0*	*0*	*0*	*1319.1*
	MOBILIZE/STAGE TOOLS & MAT'L		1.00	LS	30	U87	$1,319	$0	$0	$0	$0	$1,319
FIELD		ICP	*U.C. per WKS*		*80*	*$29.78*	*2382.4*	*0*	*0*	*0*	*0*	*2382.4*
	GENERAL HOUSEKEEPING		35.00	WKS	2,800	U84	$83,384	$0	$0	$0	$0	$83,384
Memo: Allow two laborers for general cleanup and material handling following decon effort.												
FIELD		ICP	*U.C. per LS*		*30*	*$43.97*	*1319.1*	*0*	*0*	*0*	*0*	*1319.1*
	DEMOBILIZE		1.00	LS	30	U87	$1,319	$0	$0	$0	$0	$1,319
FIELD		ICP	*U.C. per LOT*		*10*	*$43.97*	*439.7*	*0*	*0*	*0*	*0*	*439.7*
	POST JOB REVIEW		1.00	LOT	10	U87	$440	$0	$0	$0	$0	$440

DETAIL ITEM REPORT

Project Name: ***CPP 604 PEWE EMBEDDED LINES***

Project Location: ***INEEL/INTEC***
Estimate Number: ***2723-A***

Client: ***C. J. Urbanski, MS 3101, 6-3581***
Prepared By: ***R. Adams***
Estimate Type: ***Project Support***

Code	Description	Contractor	Qty	UOM	Hrs	Resource	Labor	Equipment	Material	Subcontractor	Other	TOTAL
9201 GENERAL CONDITIONS												
		ICP *U.C. per LS*					*0*	*0*	*88800*	*0*	*0*	*88800*
	PPEs		1.00	LS	0		$0	$0	$88,800	$0	$0	$88,800
Memo: 5 PPE's/day for construction duration (5 x 37 weeks x 4 days/week) = 740 ppes @ $120/each = $88,800.												
	Subtotal						$146,565	$0	$88,800	$0	$0	$235,365
	Sales Tax						$0	$0	$5,328	$0	$0	$5,328
	INEEL/Subcontractor Overheads	0.00%					$0	$0	$0	$0	$0	$0
	Subtotal Estimate											**$240,693**
	Escalation						$7,871	$0	$5,055	$0	$0	$12,925
	Contingency						$55,363	$0	$35,556	$0	$0	$90,919
—Total 9201 GENERAL CONDITIONS					**4,350**		**$209,798**	**$0**	**$134,738**	**$0**	**$0**	**$344,537**
9202 PREP WORK												
FIELD		ICP *U.C. per EA*			*40*	*$36.32*	*1452.8*	*0*	*0*	*0*	*0*	*1452.8*
	REMOVE CELL HATCHES		2.00	EA	80	U83	$2,906	$0	$0	$0	$0	$2,906
Memo: Assume using existing mobile lifting device. Both small hatches into WM-101/102, and WL-101/102 cells will need to be removed.												
FIELD		ICP *U.C. per LS*			*160*	*$29.78*	*4764.8*	*0*	*0*	*0*	*0*	*4764.8*
	DECON CELLS		1.00	LS	160	U84	$4,765	$0	$0	$0	$0	$4,765
FIELD		ICP *U.C. per EA*			*80*	*$34.38*	*2750.4*	*0*	*2500*	*0*	*0*	*5250.4*
	FAB & INSTALL TENTS		3.00	EA	240	U81	$8,251	$0	$7,500	$0	$0	$15,751
FIELD		ICP *U.C. per EA*					*0*	*0*	*1500*	*0*	*0*	*1500*
	PURCHASE HEPA VACS		2.00	EA	0		$0	$0	$3,000	$0	$0	$3,000
FIELD		ICP *U.C. per EA*					*0*	*0*	*5000*	*0*	*0*	*5000*
	PURCHASE HEPA VENTILATION SYSTEMS		2.00	EA	0		$0	$0	$10,000	$0	$0	$10,000
FIELD		ICP *U.C. per LS*					*0*	*0*	*4000*	*0*	*0*	*4000*
	PURCHASE CORE BITS		1.00	LS	0		$0	$0	$4,000	$0	$0	$4,000
Memo: Assume two 10" dia. X 36" long for 1 1/2", 2", & 3" pipe cores.												
FIELD		ICP *U.C. per PLC*			*90*	*$34.38*	*3094.2*	*0*	*200*	*0*	*0*	*3294.2*
	SCAFFOLDING		4.00	PLC	360	U81	$12,377	$0	$800	$0	$0	$13,177

DETAIL ITEM REPORT

Project Name: ***CPP 604 PEWE EMBEDDED LINES***

Project Location: ***INEEL/INTEC***
Estimate Number: ***2723-A***

Client: ***C. J. Urbanski, MS 3101, 6-3581***
Prepared By: ***R. Adams***
Estimate Type: ***Project Support***

Code	Description	Contractor		Qty	UOM	Hrs	Resource	Labor	Equipment	Material	Subcontractor	Other	TOTAL
9202 PREP WORK													
FIELD	TEMPORARY SHIELDING (ALLOW)	ICP	*U.C. per LS*	1.00	LS	*150* 150	*$29.78* U84	*4467* $4,467	*0* $0	*0* $0	*0* $0	*0* $0	*4467* $4,467
Memo: Required shielding materials are available on site.													
FIELD	INITIAL RAD SURVEY	ICP	*U.C. per LS*	1.00	LS	*80* 80	*$51.31* U60	*4105.2* $4,105	*0* $0	*0* $0	*0* $0	*0* $0	*4105.2* $4,105
	Subtotal							$36,871	$0	$25,300	$0	$0	$62,171
	Sales Tax							$0	$0	$1,518	$0	$0	$1,518
	INEEL/Subcontractor Overheads		0.00%					$0	$0	$0	$0	$0	$0
	Subtotal Estimate												**$63,689**
	Escalation							$1,980	$0	$1,440	$0	$0	$3,420
	Contingency							$13,927	$0	$10,130	$0	$0	$24,058
---Total 9202 PREP WORK						**1,070**		**$52,778**	**$0**	**$38,388**	**$0**	**$0**	**$91,166**
9203 4" PWL-1133C													
FIELD	INSTALL & REMOVE GLOVE BAGS FOR PIPE CUTS	ICP	*U.C. per EA*	5.00	EA	*30* 150	*$43.97* U87	*1319.1* $6,596	*0* $0	*35* $175	*0* $0	*0* $0	*1354.1* $6,771
FIELD	CUT PIPE	ICP	*U.C. per EA*	5.00	EA	*30* 150	*$43.97* U87	*1319.1* $6,596	*0* $0	*0* $0	*0* $0	*0* $0	*1319.1* $6,596
Memo: Includes measuring, drilling weep holes in pipe for drainage of residual liquids, cutting pipe, and removing spool pc to WAA. Assume cutting existing pipe on either side of existing tee, and on WM-100 side of wall.													
FIELD	PLUG EXISTING PIPE & SEALWELD	ICP	*U.C. per EA*	2.00	EA	*30* 60	*$43.97* U87	*1319.1* $2,638	*0* $0	*50* $100	*0* $0	*0* $0	*1369.1* $2,738
FIELD	CORE DRILL 10" DIA. X 4'+	ICP	*U.C. per EA*	1.00	EA	*80* 80	*$29.78* U84	*2382.4* $2,382	*0* $0	*0* $0	*0* $0	*0* $0	*2382.4* $2,382
	FABRICATE SLEEVE ASSEMBLY	ICP	*U.C. per EA*	1.00	EA	*30* 30	*$43.97* U87	*1319.1* $1,319	*0* $0	*455* $455	*0* $0	*0* $0	*1774.1* $1,774
Memo: Includes 3" & 4" spool piece, including inspection and testing. Shop fab entire spool and deliver to cell as one assembly to ease installation.													
FIELD	INSTALL SLEEVE ASSEMBLY	ICP	*U.C. per EA*	1.00	EA	*90* 90	*$43.97* U87	*3957.3* $3,957	*0* $0	*0* $0	*0* $0	*0* $0	*3957.3* $3,957

DETAIL ITEM REPORT

Project Name: ***CPP 604 PEWE EMBEDDED LINES***

Project Location: ***INEEL/INTEC***
Estimate Number: ***2723-A***

Client: ***C. J. Urbanski, MS 3101, 6-3581***
Prepared By: ***R. Adams***
Estimate Type: ***Project Support***

Code	Description	Contractor		Qty	UOM	Hrs	Resource	Labor	Equipment	Material	Subcontractor	Other	TOTAL
9203 4" PWL-1133C													
FIELD		ICP	*U.C. per EA*			*30*	*$43.97*	*1319.1*	*0*	*200*	*0*	*0*	*1519.1*
	FIELD SW			4.00	EA	120	U87	$5,276	$0	$800	$0	$0	$6,076
FIELD		ICP	*U.C. per EA*			*15*	*$43.97*	*659.55*	*0*	*0*	*0*	*0*	*659.55*
	SENSITIVE LEAK TEST			4.00	EA	60	U87	$2,638	$0	$0	$0	$0	$2,638
FIELD		ICP	*U.C. per LS*			*30*	*$43.97*	*1319.1*	*0*	*0*	*0*	*0*	*1319.1*
	SEALWELD LINER RING			1.00	LS	30	U87	$1,319	$0	$0	$0	$0	$1,319
Memo:	Assume this penetration is located within the area that is covered by a stainless steel wainscot. 6" sleeve will be shop seal welded to a seal ring. the outside diameter of the ring will be field seal welded to the sst liner.												
FIELD		ICP	*U.C. per EA*			*30*	*$29.78*	*893.4*	*0*	*70*	*0*	*0*	*963.4*
	GROUT SLEEVE			1.00	EA	30	U84	$893	$0	$70	$0	$0	$963
	Subtotal							$33,615	$0	$1,600	$0	$0	$35,215
	Sales Tax							$0	$0	$96	$0	$0	$96
	INEEL/Subcontractor Overheads		0.00%					$0	$0	$0	$0	$0	$0
	Subtotal Estimate												**$35,311**
	Escalation							$1,805	$0	$91	$0	$0	$1,896
	Contingency							$12,698	$0	$641	$0	$0	$13,338
---Total 9203 4" PWL-1133C						**800**		**$48,118**	**$0**	**$2,428**	**$0**	**$0**	**$50,546**
9204 2" PWL-2068C													
FIELD		ICP	*U.C. per EA*			*30*	*$43.97*	*1319.1*	*0*	*35*	*0*	*0*	*1354.1*
	INSTALL & REMOVE GLOVE BAGS FOR PIPE CUTS			2.00	EA	60	U87	$2,638	$0	$70	$0	$0	$2,708
FIELD		ICP	*U.C. per EA*			*30*	*$43.97*	*1319.1*	*0*	*0*	*0*	*0*	*1319.1*
	CUT PIPE			2.00	EA	60	U87	$2,638	$0	$0	$0	$0	$2,638
Memo:	Includes measuring, drilling weep holes in pipe for drainage of residual liquids, cutting pipe, and removing spool pc to WAA.												
FIELD		ICP	*U.C. per EA*			*30*	*$29.78*	*893.4*	*0*	*0*	*0*	*0*	*893.4*
	CORE DRILL 10" DIA. X 2'			1.00	EA	30	U84	$893	$0	$0	$0	$0	$893

DETAIL ITEM REPORT

Project Name: ***CPP 604 PEWE EMBEDDED LINES***

Project Location: ***INEEL/INTEC***
Estimate Number: ***2723-A***

Client: ***C. J. Urbanski, MS 3101, 6-3581***
Prepared By: ***R. Adams***
Estimate Type: ***Project Support***

Code	Description	Contractor		Qty	UOM	Hrs	Resource	Labor	Equipment	Material	Subcontractor	Other	TOTAL
9204 2" PWL-2068C													
	FABRICATE SLEEVE	ICP	*U.C. per EA*	1.00	EA	*10* 10	*$43.97* U87	*439.7* $440	*0* $0	*104* $104	*0* $0	*0* $0	*543.7* $544
Memo: Sleeve will extend 6" on either side of walls.													
FIELD	INSTALL SLEEVE	ICP	*U.C. per EA*	1.00	EA	*30* 30	*$43.97* U87	*1319.1* $1,319	*0* $0	*0* $0	*0* $0	*0* $0	*1319.1* $1,319
FIELD	FIELD SW	ICP	*U.C. per EA*	2.00	EA	*30* 60	*$43.97* U87	*1319.1* $2,638	*0* $0	*31* $62	*0* $0	*0* $0	*1350.1* $2,700
FIELD	SENSITIVE LEAK TEST	ICP	*U.C. per EA*	4.00	EA	*15* 60	*$43.97* U87	*659.55* $2,638	*0* $0	*0* $0	*0* $0	*0* $0	*659.55* $2,638
FIELD	GROUT SLEEVE	ICP	*U.C. per EA*	1.00	EA	*15* 15	*$29.78* U84	*446.7* $447	*0* $0	*35* $35	*0* $0	*0* $0	*481.7* $482
	Subtotal							$13,652	$0	$271	$0	$0	$13,923
	Sales Tax							$0	$0	$16	$0	$0	$16
	INEEL/Subcontractor Overheads		0.00%					$0	$0	$0	$0	$0	$0
	Subtotal Estimate												**$13,939**
	Escalation							$733	$0	$15	$0	$0	$749
	Contingency							$5,157	$0	$109	$0	$0	$5,265
—Total 9204 2" PWL-2068C						**325**		**$19,542**	**$0**	**$411**	**$0**	**$0**	**$19,953**
9203 1 1/2" PWL-2069C													
FIELD	INSTALL & REMOVE GLOVE BAGS FOR PIPE CUTS	ICP	*U.C. per EA*	4.00	EA	*10* 40	*$43.97* U87	*439.7* $1,759	*0* $0	*35* $140	*0* $0	*0* $0	*474.7* $1,899
FIELD	CUT PIPE	ICP	*U.C. per EA*	4.00	EA	*10* 40	*$43.97* U87	*439.7* $1,759	*0* $0	*0* $0	*0* $0	*0* $0	*439.7* $1,759
Memo: Includes measuring, drilling weep holes in pipe for drainage of residual liquids, cutting pipe, and removing spool pc to WAA.													
FIELD	PLUG EXISTING PIPE & SEALWELD	ICP	*U.C. per EA*	2.00	EA	*20* 40	*$43.97* U87	*879.4* $1,759	*0* $0	*50* $100	*0* $0	*0* $0	*929.4* $1,859

DETAIL ITEM REPORT

Project Name: ***CPP 604 PEWE EMBEDDED LINES***

Project Location: ***INEEL/INTEC***
Estimate Number: ***2723-A***

Client: ***C. J. Urbanski, MS 3101, 6-3581***
Prepared By: ***R. Adams***
Estimate Type: ***Project Support***

Code	Description	Contractor		Qty	UOM	Hrs	Resource	Labor	Equipment	Material	Subcontractor	Other	TOTAL
9203 1 1/2" PWL-2069C													
FIELD	CORE DRILL 8" DIA. X 2'	ICP	*U.C. per EA*	1.00	EA	*20* 20	*$29.78* U84	*595.6* $596	*0* $0	*0* $0	*0* $0	*0* $0	*595.6* $596
	FABRICATE SLEEVE ASSEMBLY	ICP	*U.C. per EA*	1.00	EA	*30* 30	*$43.97* U87	*1319.1* $1,319	*0* $0	*119* $119	*0* $0	*0* $0	*1438.1* $1,438
FIELD	INSTALL SLEEVE ASSEMBLY	ICP	*U.C. per EA*	1.00	EA	*20* 20	*$43.97* U87	*879.4* $879	*0* $0	*0* $0	*0* $0	*0* $0	*879.4* $879
FIELD	FIELD SW	ICP	*U.C. per EA*	6.00	EA	*7.5* 45	*$43.97* U87	*329.775* $1,979	*0* $0	*200* $1,200	*0* $0	*0* $0	*529.775* $3,179
FIELD	SENSITIVE LEAK TEST	ICP	*U.C. per EA*	6.00	EA	*3.25* 20	*$43.97* U87	*142.902* $857	*0* $0	*0* $0	*0* $0	*0* $0	*142.902* $857
FIELD	GROUT SLEEVE	ICP	*U.C. per EA*	1.00	EA	*10* 10	*$29.78* U84	*297.8* $298	*0* $0	*70* $70	*0* $0	*0* $0	*367.8* $368
	Subtotal							$11,204	$0	$1,629	$0	$0	$12,833
	Sales Tax							$0	$0	$98	$0	$0	$98
	INEEL/Subcontractor Overheads		0.00%					$0	$0	$0	$0	$0	$0
	Subtotal Estimate												**$12,931**
	Escalation							$602	$0	$93	$0	$0	$694
	Contingency							$4,232	$0	$652	$0	$0	$4,885
---Total 9203 1 1/2" PWL-2069C						**265**		**$16,038**	**$0**	**$2,472**	**$0**	**$0**	**$18,510**
9205 1 1/2" PWL-2091-C													
FIELD	INSTALL & REMOVE GLOVE BAGS FOR PIPE CUTS	ICP	*U.C. per EA*	2.00	EA	*30* 60	*$43.97* U87	*1319.1* $2,638	*0* $0	*35* $70	*0* $0	*0* $0	*1354.1* $2,708
FIELD	CUT PIPE	ICP	*U.C. per EA*	2.00	EA	*30* 60	*$43.97* U87	*1319.1* $2,638	*0* $0	*0* $0	*0* $0	*0* $0	*1319.1* $2,638

Memo: Includes measuring, drilling weep holes in pipe for drainage of residual liquids, cutting pipe, and removing spool pc to WAA.

DETAIL ITEM REPORT

Project Name: ***CPP 604 PEWE EMBEDDED LINES***

Project Location: ***INEEL/INTEC***
Estimate Number: ***2723-A***

Client: ***C. J. Urbanski, MS 3101, 6-3581***
Prepared By: ***R. Adams***
Estimate Type: ***Project Support***

Code	Description	Contractor		Qty	UOM	Hrs	Resource	Labor	Equipment	Material	Subcontractor	Other	TOTAL
9205 1 1/2" PWL-2091-C													
FIELD		ICP	*U.C. per EA*			*60*	*$29.78*	*1786.8*	*0*	*0*	*0*	*0*	*1786.8*
	CORE DRILL 10" DIA. X 3'			1.00	EA	60	U84	$1,787	$0	$0	$0	$0	$1,787
		ICP	*U.C. per EA*			*10*	*$43.97*	*439.7*	*0*	*119*	*0*	*0*	*558.7*
	FABRICATE SLEEVE			1.00	EA	10	U87	$440	$0	$119	$0	$0	$559
Memo: Sleeve will extend 6" on either side of walls.													
FIELD		ICP	*U.C. per EA*			*30*	*$43.97*	*1319.1*	*0*	*0*	*0*	*0*	*1319.1*
	INSTALL SLEEVE			1.00	EA	30	U87	$1,319	$0	$0	$0	$0	$1,319
FIELD		ICP	*U.C. per EA*			*30*	*$43.97*	*1319.1*	*0*	*20*	*0*	*0*	*1339.1*
	FIELD SW			2.00	EA	60	U87	$2,638	$0	$40	$0	$0	$2,678
FIELD		ICP	*U.C. per EA*			*15*	*$43.97*	*659.55*	*0*	*0*	*0*	*0*	*659.55*
	SENSITIVE LEAK TEST			4.00	EA	60	U87	$2,638	$0	$0	$0	$0	$2,638
FIELD		ICP	*U.C. per EA*			*15*	*$29.78*	*446.7*	*0*	*53*	*0*	*0*	*499.7*
	GROUT SLEEVE			1.00	EA	15	U84	$447	$0	$53	$0	$0	$500
	Subtotal							$14,545	$0	$282	$0	$0	$14,827
	Sales Tax							$0	$0	$17	$0	$0	$17
	INEEL/Subcontractor Overheads		0.00%					$0	$0	$0	$0	$0	$0
	Subtotal Estimate												**$14,844**
	Escalation							$781	$0	$16	$0	$0	$797
	Contingency							$5,494	$0	$113	$0	$0	$5,607
—Total 9205 1 1/2" PWL-2091-C						**355**		**$20,820**	**$0**	**$428**	**$0**	**$0**	**$21,248**
9206 1 1/2" PWL-2091C													
FIELD		ICP	*U.C. per EA*			*30*	*$43.97*	*1319.1*	*0*	*35*	*0*	*0*	*1354.1*
	INSTALL & REMOVE GLOVE BAGS FOR PIPE CUTS			2.00	EA	60	U87	$2,638	$0	$70	$0	$0	$2,708
FIELD		ICP	*U.C. per EA*			*30*	*$43.97*	*1319.1*	*0*	*0*	*0*	*0*	*1319.1*
	CUT PIPE			2.00	EA	60	U87	$2,638	$0	$0	$0	$0	$2,638
Memo: Includes measuring, drilling weep holes in pipe for drainage of residual liquids, cutting pipe, and removing spool pc to WAA.													

DETAIL ITEM REPORT

Project Name: ***CPP 604 PEWE EMBEDDED LINES***

Project Location: ***INEEL/INTEC***
Estimate Number: ***2723-A***

Client: ***C. J. Urbanski, MS 3101, 6-3581***
Prepared By: ***R. Adams***
Estimate Type: ***Project Support***

Code	Description	Contractor		Qty	UOM	Hrs	Resource	Labor	Equipment	Material	Subcontractor	Other	TOTAL
9206 1 1/2" PWL-2091C													
FIELD		ICP	*U.C. per EA*			*60*	*$29.78*	*1786.8*	*0*	*0*	*0*	*0*	*1786.8*
	CORE DRILL 10" DIA. X 3'			1.00	EA	60	U84	$1,787	$0	$0	$0	$0	$1,787
		ICP	*U.C. per EA*			*10*	*$43.97*	*439.7*	*0*	*119*	*0*	*0*	*558.7*
	FABRICATE SLEEVE			1.00	EA	10	U87	$440	$0	$119	$0	$0	$559
Memo: Sleeve will extend 6" on either side of walls.													
FIELD		ICP	*U.C. per EA*			*30*	*$43.97*	*1319.1*	*0*	*0*	*0*	*0*	*1319.1*
	INSTALL SLEEVE			1.00	EA	30	U87	$1,319	$0	$0	$0	$0	$1,319
FIELD		ICP	*U.C. per EA*			*30*	*$43.97*	*1319.1*	*0*	*20*	*0*	*0*	*1339.1*
	FIELD SW			2.00	EA	60	U87	$2,638	$0	$40	$0	$0	$2,678
FIELD		ICP	*U.C. per EA*			*15*	*$43.97*	*659.55*	*0*	*0*	*0*	*0*	*659.55*
	SENSITIVE LEAK TEST			4.00	EA	60	U87	$2,638	$0	$0	$0	$0	$2,638
FIELD		ICP	*U.C. per EA*			*15*	*$29.78*	*446.7*	*0*	*53*	*0*	*0*	*499.7*
	GROUT SLEEVE			1.00	EA	15	U84	$447	$0	$53	$0	$0	$500
	Subtotal							$14,545	$0	$282	$0	$0	$14,827
	Sales Tax							$0	$0	$17	$0	$0	$17
	INEEL/Subcontractor Overheads		0.00%					$0	$0	$0	$0	$0	$0
	Subtotal Estimate												**$14,844**
	Escalation							$781	$0	$16	$0	$0	$797
	Contingency							$5,494	$0	$113	$0	$0	$5,607
---Total 9206 1 1/2" PWL-2091C						**355**		**$20,820**	**$0**	**$428**	**$0**	**$0**	**$21,248**
9207 12" PSA-105551													
FIELD		ICP	*U.C. per EA*			*30*	*$43.97*	*1319.1*	*0*	*35*	*0*	*0*	*1354.1*
	INSTALL & REMOVE GLOVE BAGS FOR PIPE CUTS			2.00	EA	60	U87	$2,638	$0	$70	$0	$0	$2,708
FIELD		ICP	*U.C. per EA*			*30*	*$43.97*	*1319.1*	*0*	*0*	*0*	*0*	*1319.1*
	CUT PIPE			2.00	EA	60	U87	$2,638	$0	$0	$0	$0	$2,638
Memo: Includes measuring, drilling weep holes in pipe for drainage of residual liquids, cutting pipe, and removing spool piece to WAA.													

Code	Description	Contractor		Qty	UOM	Hrs	Resource	Labor	Equipment	Material	Subcontractor	Other	TOTAL
9207 12" PSA-105551													
		ICP	*U.C. per EA*			*15*	*$43.97*	*659.55*	*0*	*604*	*0*	*0*	*1263.55*
	FABRICATE SLEEVE			1.00	EA	15	U87	$660	$0	$604	$0	$0	$1,264
	Memo: There is an existing opening around the 12" line. This opening is sufficiently large enough to insert a sleeve through the wall without the need to core drill. Assume sleeve is 16" sch 10 304L pipe. Sleeve will extend 6" on either side of walls.												
FIELD		ICP	*U.C. per EA*			*30*	*$43.97*	*1319.1*	*0*	*0*	*0*	*0*	*1319.1*
	INSTALL SLEEVE			1.00	EA	30	U87	$1,319	$0	$0	$0	$0	$1,319
FIELD		ICP	*U.C. per EA*			*60*	*$43.97*	*2638.2*	*0*	*0*	*0*	*0*	*2638.2*
	REWELD REMOVED SPOOL PIECE			2.00	EA	120	U87	$5,276	$0	$0	$0	$0	$5,276
FIELD		ICP	*U.C. per EA*			*15*	*$43.97*	*659.55*	*0*	*0*	*0*	*0*	*659.55*
	SENSITIVE LEAK TEST			2.00	EA	30	U87	$1,319	$0	$0	$0	$0	$1,319
FIELD		ICP	*U.C. per EA*			*15*	*$29.78*	*446.7*	*0*	*117*	*0*	*0*	*563.7*
	GROUT SLEEVE			1.00	EA	15	U84	$447	$0	$117	$0	$0	$564
	Subtotal							$14,297	$0	$791	$0	$0	$15,088
	Sales Tax							$0	$0	$47	$0	$0	$47
	INEEL/Subcontractor Overheads		0.00%					$0	$0	$0	$0	$0	$0
	Subtotal Estimate												**$15,136**
	Escalation							$768	$0	$45	$0	$0	$813
	Contingency							$5,401	$0	$317	$0	$0	$5,717
---Total 9207 12" PSA-105551						**330**		**$20,466**	**$0**	**$1,200**	**$0**	**$0**	**$21,666**
9208 3" PWM-1018Y													
FIELD		ICP	*U.C. per EA*			*30*	*$43.97*	*1319.1*	*0*	*35*	*0*	*0*	*1354.1*
	INSTALL & REMOVE GLOVE BAGS FOR PIPE CUTS			5.00	EA	150	U87	$6,596	$0	$175	$0	$0	$6,771
FIELD		ICP	*U.C. per EA*			*30*	*$43.97*	*1319.1*	*0*	*0*	*0*	*0*	*1319.1*
	CUT PIPE			2.00	EA	60	U87	$2,638	$0	$0	$0	$0	$2,638
	Memo: Includes measuring, drilling weep holes in pipe for drainage of residual liquids, cutting pipe, and removing spool pc to WAA.												
FIELD		ICP	*U.C. per EA*			*60*	*$29.78*	*1786.8*	*0*	*0*	*0*	*0*	*1786.8*
	CORE DRILL 10" DIA. X 2'			1.00	EA	60	U84	$1,787	$0	$0	$0	$0	$1,787

DETAIL ITEM REPORT

Project Name: ***CPP 604 PEWE EMBEDDED LINES***

Project Location: ***INEEL/INTEC***
Estimate Number: ***2723-A***

Client: ***C. J. Urbanski, MS 3101, 6-3581***
Prepared By: ***R. Adams***
Estimate Type: ***Project Support***

Code	Description	Contractor		Qty	UOM	Hrs	Resource	Labor	Equipment	Material	Subcontractor	Other	TOTAL
9208 3" PWM-1018Y													
		ICP	*U.C. per EA*			*10*	*$43.97*	*439.7*	*0*	*104*	*0*	*0*	*543.7*
	FABRICATE SLEEVE			1.00	EA	10	U87	$440	$0	$104	$0	$0	$544
	Memo: Sleeve will extend 6" on either side of walls.												
FIELD		ICP	*U.C. per EA*			*30*	*$43.97*	*1319.1*	*0*	*0*	*0*	*0*	*1319.1*
	INSTALL SLEEVE			1.00	EA	30	U87	$1,319	$0	$0	$0	$0	$1,319
FIELD		ICP	*U.C. per EA*			*30*	*$43.97*	*1319.1*	*0*	*150*	*0*	*0*	*1469.1*
	FIELD SW			2.00	EA	60	U87	$2,638	$0	$300	$0	$0	$2,938
FIELD		ICP	*U.C. per EA*			*15*	*$43.97*	*659.55*	*0*	*0*	*0*	*0*	*659.55*
	SENSITIVE LEAK TEST			4.00	EA	60	U87	$2,638	$0	$0	$0	$0	$2,638
FIELD		ICP	*U.C. per EA*			*15*	*$29.78*	*446.7*	*0*	*35*	*0*	*0*	*481.7*
	GROUT SLEEVE			1.00	EA	15	U84	$447	$0	$35	$0	$0	$482
	Subtotal							$18,502	$0	$614	$0	$0	$19,116
	Sales Tax							$0	$0	$37	$0	$0	$37
	INEEL/Subcontractor Overheads		0.00%					$0	$0	$0	$0	$0	$0
	Subtotal Estimate												**$19,153**
	Escalation							$994	$0	$35	$0	$0	$1,029
	Contingency							$6,989	$0	$246	$0	$0	$7,235
---Total 9208 3" PWM-1018Y						**445**		**$28,485**	**$0**	**$932**	**$0**	**$0**	**$27,417**
9208 3" PWM-10024Y													
FIELD		ICP	*U.C. per EA*			*30*	*$43.97*	*1319.1*	*0*	*35*	*0*	*0*	*1354.1*
	INSTALL & REMOVE GLOVE BAGS FOR PIPE CUTS			5.00	EA	150	U87	$6,596	$0	$175	$0	$0	$6,771
FIELD		ICP	*U.C. per EA*			*30*	*$43.97*	*1319.1*	*0*	*0*	*0*	*0*	*1319.1*
	CUT PIPE			2.00	EA	60	U87	$2,638	$0	$0	$0	$0	$2,638
	Memo: Includes measuring, drilling weep holes in pipe for drainage of residual liquids, cutting pipe, and removing spool pc to WAA.												
FIELD		ICP	*U.C. per EA*			*60*	*$29.78*	*1786.8*	*0*	*0*	*0*	*0*	*1786.8*
	CORE DRILL 10" DIA. X 2'			1.00	EA	60	U84	$1,787	$0	$0	$0	$0	$1,787

DETAIL ITEM REPORT

Project Name: ***CPP 604 PEWE EMBEDDED LINES***

Project Location: ***INEEL/INTEC***
Estimate Number: ***2723-A***

Client: ***C. J. Urbanski, MS 3101, 6-3581***
Prepared By: ***R. Adams***
Estimate Type: ***Project Support***

Code	Description	Contractor		Qty	UOM	Hrs	Resource	Labor	Equipment	Material	Subcontractor	Other	TOTAL
9209 3" PWM-10024Y													
		ICP	*U.C. per EA*			*10*	*$43.97*	*439.7*	*0*	*104*	*0*	*0*	*543.7*
	FABRICATE SLEEVE			1.00	EA	10	U87	$440	$0	$104	$0	$0	$544
	Memo: Sleeve will extend 6" on either side of walls.												
FIELD		ICP	*U.C. per EA*			*30*	*$43.97*	*1319.1*	*0*	*0*	*0*	*0*	*1319.1*
	INSTALL SLEEVE			1.00	EA	30	U87	$1,319	$0	$0	$0	$0	$1,319
FIELD		ICP	*U.C. per EA*			*30*	*$43.97*	*1319.1*	*0*	*150*	*0*	*0*	*1469.1*
	FIELD SW			2.00	EA	60	U87	$2,638	$0	$300	$0	$0	$2,938
FIELD		ICP	*U.C. per EA*			*15*	*$43.97*	*659.55*	*0*	*0*	*0*	*0*	*659.55*
	SENSITIVE LEAK TEST			4.00	EA	60	U87	$2,638	$0	$0	$0	$0	$2,638
FIELD		ICP	*U.C. per EA*			*15*	*$29.78*	*446.7*	*0*	*35*	*0*	*0*	*481.7*
	GROUT SLEEVE			1.00	EA	15	U84	$447	$0	$35	$0	$0	$482
	Subtotal							$18,502	$0	$614	$0	$0	$19,116
	Sales Tax							$0	$0	$37	$0	$0	$37
	INEEL/Subcontractor Overheads		0.00%					$0	$0	$0	$0	$0	$0
	Subtotal Estimate												**$19,153**
	Escalation							$994	$0	$35	$0	$0	$1,029
	Contingency							$6,989	$0	$246	$0	$0	$7,235
---Total 9209 3" PWM-10024Y						**445**		**$26,485**	**$0**	**$932**	**$0**	**$0**	**$27,417**
9210 3" PWM-20015Y													
FIELD		ICP	*U.C. per EA*			*30*	*$43.97*	*1319.1*	*0*	*35*	*0*	*0*	*1354.1*
	INSTALL & REMOVE GLOVE BAGS FOR PIPE CUTS			5.00	EA	150	U87	$6,596	$0	$175	$0	$0	$6,771
FIELD		ICP	*U.C. per EA*			*30*	*$43.97*	*1319.1*	*0*	*0*	*0*	*0*	*1319.1*
	CUT PIPE			2.00	EA	60	U87	$2,638	$0	$0	$0	$0	$2,638
	Memo: Includes measuring, drilling weep holes in pipe for drainage of residual liquids, cutting pipe, and removing spool pc to WAA.												
FIELD		ICP	*U.C. per EA*			*60*	*$29.78*	*1786.8*	*0*	*0*	*0*	*0*	*1786.8*
	CORE DRILL 10" DIA. X 2'			1.00	EA	60	U84	$1,787	$0	$0	$0	$0	$1,787

DETAIL ITEM REPORT

Project Name: ***CPP 604 PEWE EMBEDDED LINES***

Project Location: ***INEEL/INTEC***
Estimate Number: ***2723-A***

Client: ***C. J. Urbanski, MS 3101, 6-3581***
Prepared By: ***R. Adams***
Estimate Type: ***Project Support***

Code	Description	Contractor		Qty	UOM	Hrs	Resource	Labor	Equipment	Material	Subcontractor	Other	TOTAL
9210 3" PWM-20015Y													
		ICP	*U.C. per EA*			*10*	*$43.97*	*439.7*	*0*	*104*	*0*	*0*	*543.7*
	FABRICATE SLEEVE			1.00	EA	10	U87	$440	$0	$104	$0	$0	$544
	Memo: Sleeve will extend 6" on either side of walls.												
FIELD		ICP	*U.C. per EA*			*30*	*$43.97*	*1319.1*	*0*	*0*	*0*	*0*	*1319.1*
	INSTALL SLEEVE			1.00	EA	30	U87	$1,319	$0	$0	$0	$0	$1,319
FIELD		ICP	*U.C. per EA*			*30*	*$43.97*	*1319.1*	*0*	*150*	*0*	*0*	*1469.1*
	FIELD SW			2.00	EA	60	U87	$2,638	$0	$300	$0	$0	$2,938
FIELD		ICP	*U.C. per EA*			*15*	*$43.97*	*659.55*	*0*	*0*	*0*	*0*	*659.55*
	SENSITIVE LEAK TEST			4.00	EA	60	U87	$2,638	$0	$0	$0	$0	$2,638
FIELD		ICP	*U.C. per EA*			*15*	*$29.78*	*446.7*	*0*	*35*	*0*	*0*	*481.7*
	GROUT SLEEVE			1.00	EA	15	U84	$447	$0	$35	$0	$0	$482
	Subtotal							$18,502	$0	$614	$0	$0	$19,116
	Sales Tax							$0	$0	$37	$0	$0	$37
	INEEL/Subcontractor Overheads		0.00%					$0	$0	$0	$0	$0	$0
	Subtotal Estimate												**$19,153**
	Escalation							$994	$0	$35	$0	$0	$1,029
	Contingency							$6,989	$0	$246	$0	$0	$7,235
---Total 9210 3" PWM-20015Y						**445**		**$26,485**	**$0**	**$932**	**$0**	**$0**	**$27,417**
9211 3" WM-503 JET GASKET													
FIELD		ICP	*U.C. per LS*			*30*	*$43.97*	*1319.1*	*0*	*60*	*0*	*0*	*1379.1*
	REPLACE WM-503 RING GASKET			1.00	LS	30	U87	$1,319	$0	$60	$0	$0	$1,379
	Memo: Current line leaks. Assume the leak is caused by the ring gasket.												

DETAIL ITEM REPORT

Project Name: ***CPP 604 PEWE EMBEDDED LINES***

Project Location: ***INEEL/INTEC***
Estimate Number: ***2723-A***

Client: ***C. J. Urbanski, MS 3101, 6-3581***
Prepared By: ***R. Adams***
Estimate Type: ***Project Support***

Code	Description	Contractor	Qty	UOM	Hrs	Resource	Labor	Equipment	Material	Subcontractor	Other	TOTAL
9211 3" WM-503 JET GASKET												
	Subtotal						$1,319	$0	$60	$0	$0	$1,379
	Sales Tax						$0	$0	$4	$0	$0	$4
	INEEL/Subcontractor Overheads	0.00%					$0	$0	$0	$0	$0	$0
	Subtotal Estimate											**$1,383**
	Escalation						$71	$0	$3	$0	$0	$74
	Contingency						$498	$0	$24	$0	$0	$522
—Total 9211 3" WM-503 JET GASKET					30		**$1,888**	**$0**	**$91**	**$0**	**$0**	**$1,979**
9212 EXIT ACTIVITIES												
FIELD	ICP	*U.C. per LS*			*90*	*$29.78*	*2680.2*	*0*	*0*	*0*	*0*	*2680.2*
	REMOVE TEMPORARY SHIELDING		1.00	LS	90	U84	$2,680	$0	$0	$0	$0	$2,680
FIELD	ICP	*U.C. per LS*			*60*	*$29.78*	*1786.8*	*0*	*0*	*0*	*0*	*1786.8*
	REMOVE SCAFFOLDING		1.00	LS	60	U84	$1,787	$0	$0	$0	$0	$1,787
FIELD	ICP	*U.C. per EA*			*25*	*$29.78*	*744.5*	*0*	*0*	*0*	*0*	*744.5*
	REMOVE & DECON TENTS		3.00	EA	75	U84	$2,234	$0	$0	$0	$0	$2,234
	Subtotal						$6,701	$0	$0	$0	$0	$6,701
	Sales Tax						$0	$0	$0	$0	$0	$0
	INEEL/Subcontractor Overheads	0.00%					$0	$0	$0	$0	$0	$0
	Subtotal Estimate											**$6,701**
	Escalation						$360	$0	$0	$0	$0	$360
	Contingency						$2,531	$0	$0	$0	$0	$2,531
—Total 9212 EXIT ACTIVITIES					225		**$9,591**	**$0**	**$0**	**$0**	**$0**	**$9,591**
CONSTRUCTION SUPPORT												
FIELD	ICP	*U.C. per WKS*			*40*	*$60.22*	*2408.8*	*0*	*0*	*0*	*0*	*2408.8*
	OPERATIONS ENGINEERING		37.00	WKS	1,480	E54	$89,126	$0	$0	$0	$0	$89,126

DETAIL ITEM REPORT

Project Name: ***CPP 604 PEWE EMBEDDED LINES***

Project Location: ***INEEL/INTEC***
Estimate Number: ***2723-A***

Client: ***C. J. Urbanski, MS 3101, 6-3581***
Prepared By: ***R. Adams***
Estimate Type: ***Project Support***

Code	Description	Contractor		Qty	UOM	Hrs	Resource	Labor	Equipment	Material	Subcontractor	Other	TOTAL
CONSTRUCTION SUPPORT													
FIELD		ICP	*U.C. per LS*			*260*	*$60.64*	*15766.4*	*0*	*0*	*0*	*0*	*15766.4*
	RAD ENGINEERING			1.00	LS	260	E18	$15,766	$0	$0	$0	$0	$15,766
Memo: Includes decon activities; develop/review HEGS; ALARA review, site and INTEC ALARA committee review, and coordination; develop RWPs and other work controls; and general decon support.													
FIELD		ICP	*U.C. per WKS*			*10*	*$59.18*	*591.8*	*0*	*0*	*0*	*0*	*591.8*
	QUALITY			37.00	WKS	370	E17	$21,897	$0	$0	$0	$0	$21,897
FIELD		ICP	*U.C. per WKS*			*10*	*$58.42*	*584.2*	*0*	*0*	*0*	*0*	*584.2*
	SAFETY			37.00	WKS	370	E19	$21,615	$0	$0	$0	$0	$21,615
FIELD		ICP	*U.C. per WKS*			*10*	*$48.47*	*484.7*	*0*	*0*	*0*	*0*	*484.7*
	INDUSTRIAL HYGIENE			37.00	WKS	370	S08	$17,934	$0	$0	$0	$0	$17,934
FIELD		ICP	*U.C. per LS*			*40*	*$32.53*	*1301.2*	*0*	*0*	*0*	*0*	*1301.2*
	DISPOSE OF WASTE			1.00	LS	40	U73	$1,301	$0	$0	$0	$0	$1,301
FIELD		INL-ESH&Q	*U.C. per WKS*			*80*	*$38.39*	*3071.2*	*0*	*0*	*0*	*0*	*3071.2*
	RCTs			37.00	WKS	2,960	U60-INL	$113,634	$0	$0	$0	$0	$113,634
FIELD		INL-ESH&Q	*U.C. per LS*			*80*	*$44.05*	*3524*	*0*	*0*	*0*	*0*	*3524*
	RCT FOREMAN			1.00	LS	80	Z10-INL	$3,524	$0	$0	$0	$0	$3,524
FIELD		ICP	*U.C. per WKS*			*5*	*$44.11*	*220.55*	*0*	*0*	*0*	*0*	*220.55*
	CONSTRUCTION COORDINATOR			37.00	WKS	185	F31	$8,160	$0	$0	$0	$0	$8,160
FIELD		ICP	*U.C. per WKS*			*15*	*$51.63*	*774.45*	*0*	*0*	*0*	*0*	*774.45*
	CONSTRUCTION FIELD ENGINEER			37.00	WKS	555	F26	$28,655	$0	$0	$0	$0	$28,655

DETAIL ITEM REPORT

Project Name: ***CPP 604 PEWE EMBEDDED LINES***

Project Location: ***INEEL/INTEC***
Estimate Number: ***2723-A***

Client: ***C. J. Urbanski, MS 3101, 6-3581***
Prepared By: ***R. Adams***
Estimate Type: ***Project Support***

Code	Description	Contractor	Qty	UOM	Hrs	Resource	Labor	Equipment	Material	Subcontractor	Other	TOTAL
CONSTRUCTION SUPPORT												
	ICP	*U.C. per LS*			*300*	*$43.97*	*13191*	*0*	*0*	*2000*	*0*	*15191*
	CRAFT TRAINING ALLOWANCE		1.00	LS	300	U87	$13,191	$0	$0	$2,000	$0	$15,191
	Subtotal						$334,804	$0	$0	$2,000	$0	$336,804
	Sales Tax						$0	$0	$0	$0	$0	$0
	INEEL/Subcontractor Overheads	22.61%					$76,153	$0	$0	$0	$0	$76,153
	Subtotal Estimate											**$412,956**
	Escalation						$22,068	$0	$0	$107	$0	$22,176
	Contingency						$102,473	$0	$0	$499	$0	$102,972
---Total	**CONSTRUCTION SUPPORT**				**6,970**		**$535,498**	**$0**	**$0**	**$2,606**	**$0**	**$538,104**
MATERIAL HANDLING/G&A												
	ICP	*U.C. per $*					*0*	*0*	*0*	*0*	*0.12*	*0.12*
	MATERIAL HANDLING FEE @ 12% OF MATERIAL COST		128,108.00	$	0		$0	$0	$0	$0	$15,373	$15,373
	Subtotal						$0	$0	$0	$0	$15,373	$15,373
	Sales Tax						$0	$0	$0	$0	$0	$0
	INEEL/Subcontractor Overheads	0.00%					$0	$0	$0	$0	$0	$0
	Subtotal Estimate											**$15,373**
	Escalation						$0	$0	$0	$0	$826	$826
	Contingency						$0	$0	$0	$0	$2,453	$2,453
---Total	**MATERIAL HANDLING/G&A**				**0**		**$0**	**$0**	**$0**	**$0**	**$18,651**	**$18,651**
ICP ALLOCATION												
	ICP	*U.C. per total$*					*0*	*0*	*0*	*0*	*0.32*	*0.32*
	ICP Allocation		952,674.00	total$	0		$0	$0	$0	$0	$304,856	$304,856

DETAIL ITEM REPORT

Project Name: ***CPP 604 PEWE EMBEDDED LINES***

Project Location: ***INEEL/INTEC***
Estimate Number: ***2723-A***

Client: ***C. J. Urbanski, MS 3101, 6-3581***
Prepared By: ***R. Adams***
Estimate Type: ***Project Support***

Code	Description	Contractor	Qty	UOM	Hrs	Resource	Labor	Equipment	Material	Subcontractor	Other	TOTAL
ICP ALLOCATION												
	Subtotal						$0	$0	$0	$0	$304,856	$304,856
	Sales Tax						$0	$0	$0	$0	$0	$0
	INEEL/Subcontractor Overheads	0.00%					$0	$0	$0	$0	$0	$0
	Subtotal Estimate											**$304,856**
	Escalation						$0	$0	$0	$0	$16,371	$16,371
	Contingency						$0	$0	$0	$0	$95,115	$95,115
---Total	**ICP ALLOCATION**				**0**		**$0**	**$0**	**$0**	**$0**	**$416,342**	**$416,342**
	Subtotal	**CPP 604 PEWE EMBEDDED LINES**					**$981,349**	**$0**	**$120,857**	**$14,000**	**$320,229**	**$1,436,435**
	Sales Tax						**$0**	**$0**	**$7,251**	**$0**	**$0**	**$7,251**
	INEEL/Subcontractor Overheads						**$76,153**	**$0**	**$0**	**$0**	**$0**	**$76,153**
	Subtotal Estimate											**$1,519,839**
	Escalation						**$49,854**	**$0**	**$6,879**	**$419**	**$17,196**	**$74,349**
	Contingency						**$289,130**	**$0**	**$48,391**	**$2,363**	**$97,568**	**$437,452**
Total	**CPP 604 PEWE EMBEDDED LINES**			**21,618**			**$1,396,486**	**$0**	**$183,379**	**$16,782**	**$434,993**	**$2,031,641**